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No. 5 Original

IN THE

Supreme Court of the United States

OCTOBER TERM, 1942

THE STATE OF COLORADO, COMPLAINANT;

vs.

THE STATE OF KANSAS AND THE FINNEY COUNTY WATER USERS' ASSOCIATION, A CORPORATION, DEFENDANTS.

APPENDIX "B" TO BRIEF FOR COMPLAINANT. REPRODUCTION OF SELECTED EXHIBITS.

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PEERLESS PRINTING COMPANY, DENVER

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REPRODUCTION OF SELECTED EXHIBITS.

PREFATORY STATEMENT

Appendix B is presented to make available for ready reference exact copies of those exhibits which the complainant deems particularly important and which can be readily reproduced in a volume of its size. Many of the maps and graphs which were introduced in evidence are so prepared and so large that it is impracticable to make copies. Much basic statistical information is contained in booklets which were received in evidence. Many of these booklets are of considerable length. Summaries

of the important matters contained therein appear either in the testimony or in the exhibits which are here reproduced.

In Appendix A is a list of all exhibits and all witnesses and a rather detailed statement of the evidence from the position of the complainant. It is thought that the use of these two appendices may facilitate the review of the lengthy record made before the Commissioner and the Special Master.

APPENDIX "B" TO BRIEF OF COMPLAINANT.

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DATA AS TO AREAS OF COUNTIES IN COLORADO

Involved in Arkansas River Basin

and River Lengths in Each.

County Name	River Length (Miles)	Total Area (Sq. Mi.)	Area in Basin (Sq. Mi.)
Lake	22	371	371
Chaffee	52	1,083	1,083
Fremont	73	1,557	1,557
Pueblo	55	2,433	2,433
Crowley	18 (a)	808	808
Otero	20 (b)	1,259	1,259
Bent	35	1,524	1,524
Prowers	45	1,630	1,630
Sums	320	10,655	10,655
Park		2,242	330
Teller		547	315
El Paso		2,121	2,027
Elbert		1,857	595
Lincoln		2,570	1,932
Kiowa		1,798	1,798
Cheyenne		1,777	994
Custer		747	747
Huerfano		1,500	1,500
Las Animas		4,809	4,285
Baca		2,552	1,280
Sums	320	22,520	15,803
Area in New Mexico			100
Totals	320	33,175	26,558 (c)

(a) River is boundary line Crowley-Otero.
(b) Additional river length in Otero County.
(c) Includes 1,200 square miles drained into Kansas via tributaries. (Net area exclusive of the 1,200 square miles revised to 24,628 square miles on Colo. Ex. 205).

DATA AS TO AREAS OF COUNTIES IN KANSAS

Involved in Arkansas River Basin and River Lengths in Each

County Name	River Length (Miles)	Total Area (Sq. Mi.)	Area in Basin (Sq. Mi.)
Hamilton	32	972	972
Kearney	29	864	864
Finney	33	1,296	1,296
Gray	32	864	576
Ford	40	1,080	918
Edwards	23	612	612
Pawnee	30	756	756
Barton	26	900	740
Rice	21	720	693
Reno	31	1,260	1,260
Sedgwick	43	1,008	1,008
Sumner	20	1,188	684
Cowley	30	1,112	936
Sums	390	12,632	11,340
Greeley		780	598
Wichita		720	432
Scott		720	433
Lane		720	564
Ness		1,080	948
Hodgeman		864	864
Rush		720	480
Ellsworth		720	90
McPherson		900	510
Marion		954	152
Harvey		540	540
Butler		1,428	1,372
Stanton		672	364
Grant		576	74
Haskell		576	48
Kiowa		720	360
Pratt		720	580
Stafford		792	792
Kingman		864	504
Sums		15,066	9,655
Totals		27,698	20,995

Adding 1,200 sq. mi. from Colorado via tributaries makes 22,195 sq. mi.

PLATE 1

AREAS OF THE COUNTIES OF KANSAS

2TH BIENNIAL REPORT KANSAS STATE BOARD OF AGRICULTURE : PAGE 546

NOTES

ALL COUNTIES IN THESE THREE GROUPS ARE LOCATED ENTIRELY OUTSIDE THE ARKANSAS RIVER BASIN.

WESTERN DIVISION		CENTRAL DIVISION		EASTERN DIVISION	
COUNTY NAME	ACRES	COUNTY NAME	ACRES	COUNTY NAME	ACRES
CHEYENNE	654,766	BARBER	725,567	ALLEN	321,961
CLARK	617,889	CLAY	419,217	ANDERSON	371,200
DECATUR	573,683	CLOUD	456,692	ATCHISON	273,883
GOVE	688,779	COMANCHE	504,299	BOURBON	406,615
GRAHAM	574,445	ELLIS	575,653	BROWN	364,662
LOGAN	688,170	DICKINSON	840,426	CHASE	496,262
MEADE	622,709	HARPER	512,126	CHAUTAUQUA	412,886
MORTON	465,311	JEWELL	586,207	CHEROKEE	372,921
NORTON	565,257	LINCOLN	460,203	COFFEY	416,944
RAWLINS	688,989	MITCHELL	458,377	CRAWFORD	377,104
SEWARD	409,884	OSBORNE	573,144	DONIPHAN	248,870
SHERIDAN	574,538	OTTAWA	459,300	DOUGLAS	298,888
SHERMAN	675,931	PHILLIPS	574,785	ELK	415,238
STEVENS	464,754	REPUBLIC	460,074	FRANKLIN	365,945
THOMAS	687,145	ROOKS	573,972	GEARY	257,637
TREGO	575,003	RUSSELL	574,655	GREENWOOD	734,234
WALLACE	583,658	SALINE	460,494	JACKSON	420,191
		SMITH	575,160	JEFFERSON	359,154
		WASHINGTON	572,232	JOHNSON	305,794
				LABETTE	414,416
				LEAVENWORTH	291,492
				LINN	385,879
				LYON	546,066
				MARSHALL	573,200
				MIAMI	375,091
				MONTGOMERY	415,186
				MORRIS	449,510
				NEMAHA	469,707
				NEOSHO	366,193
				OSAGE	458,580
				POTTAWATOMIE	550,432
				RILEY	399,829
				SHAWNEE	354,433
				WABAUNSEE	507,880
				WILSON	366,716
				WOODSON	321,717
				WYANDOTTE	99,977
GROUP TOTAL	10,110,911	GROUP TOTAL	10,062,961	DIVISION TOTAL	14,544,032

COUNTIES WHOLLY OR IN PART INSIDE THE ARKANSAS RIVER BASIN.

OFF THE CHANNEL OF THE ARKANSAS RIVER

GRANT	367,763	BUTLER	921,494
GREELEY	496,993	ELLSWORTH	461,042
HASKELL	368,228	HARVEY	344,779
HODGEMAN	849,984	KINGMAN	551,952
LANE	489,359	KIOWA	459,612
NESS	486,372	MARION	609,149
SCOTT	499,030	McPHERSON	575,239
STANTON	434,520	PRATT	465,198
WICHITA	458,521	RUSH	458,074
		STAFFORD	505,899
GROUP TOTAL	4,280,775	GROUP TOTAL	5,352,488

ON THE CHANNEL ARKANSAS RIVER

FINNEY	832,196	BARTON	574,603
FORD	694,584	COWLEY	724,719
GRAY	555,335	EDWARDS	396,366
HAMILTON	637,932	PAWNEE	481,842
KEARNEY	555,463	RENO	808,651
		RICE	463,209
		SEDGWICK	644,869
		SUMNER	766,592
GROUP TOTAL	3,275,060	GROUP TOTAL	4,852,851
SUM INSIDE GROUPS	7,555,835	SUM INSIDE GROUPS	10,205,339
DIVISION TOTALS	17,666,746		20,268,300		14,564,032

PLATE 1

TOTAL AREA WHOLE STATE OF KANSAS 52,499,078 ACRES.

(ARRANGED AND SUMMARIZED BY C. L. PATTERSON, C.E.)

PLATE 2

POPULATION of STATE of KANSAS
1881-1930
ARRANGED IN DIVISIONS BY C.L. PATTERSON, C.E.
DATA FROM BIENNIAL REPORTS OF K.S.B.A.

YEAR	105 COUNTIES WHOLE STATE OF KANSAS POPULATION		31 COUNTIES WESTERN DIVISION POPULATION		37 COUNTIES CENTRAL DIVISION POPULATION		37 COUNTIES EASTERN DIVISION POPULATION	
1880								
81	925075		28504		349856		389715	
82	962949		28670		352660		381619	
83	1025729		27784		370298		420647	
84	1135614		28356		442019		663139	
1885	1268530		41269		518400		709261	
86	1406738		98190		575154		737394	
87	1514578		127208		629458		783316	
88	1513552		134725		621222		756603	
89	1464914		118210		590068		756636	
1990	1423485		101092		541009		778434	
91								
92								
93	1366412		96210		550968		719434	
94	1338331		90256		518348		729183	
1895	1334738		85511		501128		747639	
96	1356659		74658		484458		733586	
97	1364789		73902		499393		783289	
98	1390968		73489		508498		807782	
99	1428119		77258		529935		818926	
1900	1444708		80249		548321		816138	
01	1447809		82729		545611		819469	
02	1464428		84358		548244		831826	
03	1487347		86422		551338		850588	
04	1535160		91312		557217		886761	
1905	1544963		94035		565491		885864	
06	1611791		111850		593205		906736	
07	1650160		130235		598158		920807	
08	1634798		134263		596617		923918	
09	1707491		134918		630291		942282	
1910	1690361		135525		623357		931479	
11	1686647		134338		643234		909075	
12	1669296		124616		642176		902504	
13	1685671		123310		646663		915698	
14	1672106		119348		637134		915104	
1915	1672345		125470		633846		911729	
16	1715463		139919		682468		923135	
17	1734960		150461		667857		916642	
18	1736426		148962		672726		914738	
19	1759793		146839		682164		930790	
1920	1779934		150706		698314		930607	
21	1792928		153791		698483		940580	
22	1807022		157665		705960		944287	
23	1824190		160581		708704		954515	
24	1833882		160126		709462		964294	
1925	1812916		168990		705253		944113	
26	1822918		164045		710272		948572	
27	1837514		161218		707104		968892	
28	1833425		163182		710586		959581	
29	1852114		163356		714086		969702	
1930	1851028		177845		720225		952958	

GAIN 67 %

GAIN 75.4 %

GAIN 52 %

GAIN 64 %

GAIN 20 %

GAIN 8.4 %

GAIN 27.2 %

GAIN 9 %

MEMO:- From U.S. FEDERAL CENSUS, REPORTS POPULATION OF CONTINENTAL UNITED STATES

1880 = 50,155,783
1905 = 83,913,420
1930 = 122,775,046

RATES OF GAIN 1880-1905 = 67%
1905-1930 = 46%

PLATE 8

POPULATION OF CENTRAL KANSAS
1881-1930
GROUPED WITH RESPECT TO BASIN OF ARKANSAS RIVER

YEAR	37 COUNTIES COMPRISING CENTRAL DIVISION		19 COUNTIES OUTSIDE THE BASIN		18 COUNTIES WITHIN THE BASIN		10 COUNTIES WITHIN BASIN BUT NOT ON CHANNEL		8 COUNTIES WITHIN BASIN AND ON RIVER CHANNEL		COMPARATIVE RATES OF GAIN		
	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN	OTHER REGIONS		
1880													
	349844		183713		166133		76579		89574		EASTERN DIVISION OF KANSAS GAIN 61%	STATE OF KANSAS GAIN 61%	UNITED STATES GAIN 31%
	352600		181524		171076		77873		93203				
	380284		192731		187553		82364		105189				
	442079		216101		225978		100054		125924				
1887	518460		248244		270136		129436		140670				
	578184		276336		298828		134281		164577				
	628484		292713		335741		145116		197628				
	621222		283677		337648		147288		190360				
	580008		268071		311937		126064		185873				
1890	549004	GAIN 62%	253224	GAIN 39%	294785	GAIN 87%	124106	GAIN 70%	169679	GAIN 101%			
	550964		251071		299893		128383		171861				
	518344		237618		280729		122218		158511				
1895	501126		232720		268406		116732		151672				
	486488		223139		263319		117284		146035				
	499598		231164		268429		120279		148150				
	509698		237091		272607		120287		152320				
	523956		244768		284133		125117		159071				
1900	536321		250180		286131		124742		162339				
	543677		248960		294717		127309		166408				
	548246		244795		293451		127497		170954				
	551386		246218		305167		129668		175498				
	557287		248347		308940		129930		175460				
1905	565498		258222		310276		130481		179795				
	583205		262438		320567		132524		185043				
	590855		265302		325536		133364		192190				
	596677		266598		331779		136104		198675				
	630291		272164		358127		142220		215907				
1910	639387		271723		367576		144619		223138				
	643234		274688		368881		142427		225154				
	642126		274670		367486		143381		224075				
	646073		275848		370118		143663		226432				
	637154		272224		364930		136627		228303				
1915	636046		272840		362806		142868		218898				
	682409		279408		373001		148869		224132				
	667857	GAIN 27%	281798	GAIN 3%	385789	GAIN 47%	184998	GAIN 21%	230790	GAIN 67%			
	672776		271484		401292		167950		233302				
	682164		270335		419831		169615		242513				
1920	698223		270320		428303		166130		258173				
	698803		270132		428371		169877		258644				
	705060		274006		431084		167789		263258				
	709794		272802		436492		168828		270664				
	709462		269269		440193		164932		275211				
1925	708268		268719		436848		158243		277386				
	700372		263360		437012		157477		279538				
	701704		261381		446323		159158		283143				
	710646		260142		450504		158619		291835				
	714086		261125		452931		158049		294552				
1930	720225		262269		457956		157282		300104				

PLATE 9

POPULATION OF WESTERN KANSAS
1880-1930
GROUPED WITH RESPECT TO BASIN OF ARKANSAS RIVER

YEAR.	31 COUNTIES COMPRISING WESTERN DIVISION		17 COUNTIES OUTSIDE THE BASIN		14 COUNTIES WITHIN THE BASIN		9 COUNTIES WITHIN BASIN BUT NOT UPON RIVER CHANNEL		5 COUNTIES WITHIN BASIN AND ON RIVER CHANNEL		COMPARATIVE RATES OF GAIN OF OTHER REGIONS
	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN	
1880											
	28504		17804		7700		3432		3768		
	28670		19459		9211		4501		4410		
	27786		17498		10088		4750		5301		
	28384		17398		10986		4932		6074		
1885	41269		26040		15229		7864		7365		
	94190		56045		38145		23003		15142		
	127205		78189		49049		28628		20424		
	136728		84204		52521		29076		23445		
	118210		76686		41524		21378		19646		
1890	101032		64154		31938		16493		15444		
		GAIN 264%		GAIN 235%		GAIN 300%		GAIN 295%		GAIN 308%	CENTRAL KANSAS GAIN 68%
	96210		64349		31861		16552		14779		
	90234		62082		28152		15001		13101		
1895	76571		51908		24663		12368		12295		EASTERN DIVISION OF KANSAS GAIN 61%
	76655		51919		24736		12404		12332		
	73902		50096		23806		11616		12190		
	73489		50955		22534		11317		11217		
	77256		53927		23331		11720		11611		
1900	80249		58587		24662		11896		12766		STATE OF KANSAS GAIN 67%
	82729		57789		24940		12329		12411		
	84852		58171		26687		13513		13174		
	86428		58595		27833		13811		14022		
	91512		62072		29240		14402		14838		
1905	96085		63207		30875		15516		15366		
	111850		78114		36736		17640		19096		
	130285		93816		46469		20505		26134		
	134263		97226		49037		21371		27666		
	134918		96443		48475		20321		28154		
1910	135525		97664		47861		19550		28011		
	134338		96725		47613		20612		27003		
	124414		79634		44930		18971		26003		
	123810		78772		45038		19305		25733		
	119548		76289		43539		19601		23498		
1915	125670		79988		45682		19271		27411		
	139919		89364		50555		21205		29650		
	150461		96163		54498		23863		32936		
	146862		92184		54678		23205		31470		
	146839		92787		54052		22791		31261		
1920	150706		95976		54730		23016		31714		
	153791		97421		56730		24100		32270		
	137665		99580		58013		28031		33084		
	160081		101023		59085		28978		35080		
	160124		101682		58442		28689		32783		
1925	163590		102760		60336		26822		34008		
	164045		102486		61889		26884		34678		
	161218		99340		61878		26124		35754		
	162188		100116		63072		26214		36858		
	163356		102499		65597		28058		37799		
1930	177345		105943		71902		28343		43039		

POPULATION OF FINNEY COUNTY, KANSAS
AND OTHER WESTERN KANSAS COUNTIES ON THE ARKANSAS RIVER
1880-1930

YEAR	5 COUNTIES HAMILTON, KEARNEY, FINNEY, GRAY & FORD		4 COUNTIES HAMILTON, KEARNEY, GRAY & FORD		FINNEY COUNTY		COMPARITIVE RATES OF GAIN OTHER REGIONS						CITY OF GARDEN CITY	SHERLOCK & GARDEN CITY TOWNSHIPS	ALL OTHER PORTIONS PRESENT COUNTY
	POPULATION	% GAIN	POPULATION	% GAIN	POPULATION	% GAIN							POPULATION	POPULATION	POPULATION
1880	(a) 3127		2389		(b) 848										
	3768		3040		(c) 728										
	4410		3692		(c) 941										
	5305		4330		(c) 975										
	6014		4947		(d) 1127										
1885	7365		6128		(e) 1240								378	288	436
	13142		9181		(f) 3961								2442	486	3696
	20424		13751		(g) 6673								(a) 2640	(g) 1463	(g) 3570
	23445		15089		(g) 7356								2819	927	3640
	19644		14026		5620								2323	599	2393
1890	15646		11280		4064								1445	878	1717
		GAIN 309%		GAIN 279%		GAIN 302%									
	14779		10791		3953								1612	818	1497
	13101		9345		3553								1392	894	1267
1895	12283		8744		(j) 3525								(j) 1864	(j) 950	(j) 1073
	12332		8827		3505								1628	1007	873
	12190		8357		3383								1583	888	912
	11217		8057		3160								1421	998	834
	11611		8411		3200								1580	936	844
1900	12766		9352		3214								1844	801	869
	12411		9123		3288								1478	932	977
	13174		10003		3171								1435	728	1008
	14032		10144		3273								1507	751	1018
	14333		11433		3405								1550	743	1112
1905	15364		12160		3204								1267	757	1180
	19036		14453		4613								2252	777	1584
	26164		19110		7054								3493	1369	1992
	27644		20208		7488								3453	1430	2175
	28184		20843		7609								3597	1399	2113
1910	28011		20810		7701								3718	1937	2080
	27003		20247		6756								3265	1635	1806
	26003		19373		6130								3087	1554	1519
	26253		19440		6293								3067	1711	1515
	25495		19383		6015								2803	1437	1575
1915	27411		21398		6016								3016	1462	1638
	29480	GAIN 186%	22934	GAIN 165%	6716	GAIN 223%							3197	1734	1780
	32938		25618		7317								3352	1983	2050
	31470		24034		7434								3504	1894	2036
	31241		23844		8197								3912	1909	2385
1920	31714		23573		7736								3387	1737	2162
	32270		24917		7453								3697	1761	1997
	33084		25845		7803								3729	1653	2127
	33050		25612		7468								3431	1736	2101
1925	32783		25240		7513								3394	1665	2054
	34008		25715		8293								4098	2091	2103
	34675		26477		8195								4132	1984	2052
	35784		27661		8093								3950	1975	2168
	36385		28175		8453								4440	2122	2121
	37799		29033		8766								4461	2137	2161
1930	43039		33048		10974								5143	2309	2817

WESTERN KANSAS GAIN 269%
CENTRAL KANSAS GAIN 82%
EASTERN KANSAS GAIN 41%
STATE OF KANSAS GAIN 87%
UNITED STATES GAIN 39%

WESTERN KANSAS GAIN 95%
CENTRAL KANSAS GAIN 21%
EASTERN KANSAS GAIN 9%
STATE OF KANSAS GAIN 20%
UNITED STATES GAIN 40%

(a) DATA FOR 1880 FROM FEDERAL CENSUS. FOR 1881-1930 KANSAS STATE BOARD OF AGRICULTURE.
(b) REPORTED AS SEQUOYAH COUNTY, AREA 864 SQ. MI.
(c) INTERPOLATED FOR 1881-1883.
(d) REPORTED AS 1149 FOR AREA 2880 SQ. MI.
(e) " " 1957 " " 2880 "
(f) " " 13442 " " 2808 "
(g) INTERPOLATED FOR 1887.
(h) REPORTED AS 2296 FOR AREA 864 SQ. MI.
(i) INTERPOLATED FOR 1895.
(j) INTERPOLATED FOR 1895.

PLATE II

ACRES OF FIELD CROPS IN KANSAS

DATA COMPILED AND REPORTED BY
KANSAS STATE BOARD OF AGRICULTURE AND
SUMMARIZED BY DIVISIONS BY
C. L. PATTERSON, CIVIL ENG.

YEAR		WHOLE STATE OF KANSAS	EASTERN DIVISION	CENTRAL DIVISION	WESTERN DIVISION	NOTES
		acres	acres	acres	acres	
1881	EARLY PERIOD	8,656,403	4,404,709	4,096,743	154,951	ALL ACREAGES ARE EXCLUSIVE OF PRAIRIE GRASS BUT INCLUDE ALL OTHER CROPS.
82		9,213,004	4,826,411	4,191,028	195,565	
83		8,282,821	4,011,688	4,109,824	161,309	
84		9,050,862	4,311,690	4,590,871	148,301	
1885		8,765,866	4,371,785	4,213,876	180,207	
86		9,857,616	4,662,288	4,790,921	404,407	
87		8,238,099	4,225,556	3,543,429	471,114	
88		10,083,083	4,831,581	4,356,209	906,293	
89		11,847,379	4,882,718	5,793,017	1,171,644	
1890		8,127,011	4,033,643	3,344,842	716,826	
91						
92						
93		18,198,154	8,613,320	7,581,584	2,033,243	
94		14,809,545	5,437,700	7,404,488	1,967,357	
1895		16,720,741	6,235,740	8,687,883	1,797,118	
96		15,336,029	5,832,695	7,888,940	1,614,406	
97		15,272,010	5,882,232	7,909,295	1,480,485	
98		15,858,882	6,059,421	8,126,413	1,643,048	
99		17,362,749	6,670,848	8,908,434	1,783,472	
1900		16,219,416	6,142,096	8,322,523	1,754,797	
01		16,843,313	6,317,678	8,598,731	1,926,604	
02		17,926,046	6,220,073	9,667,711	2,038,262	
03		17,263,816	6,134,515	9,032,663	2,096,838	
04		17,140,666	6,055,821	8,996,770	2,088,075	
1905		17,558,740	6,014,521	9,212,143	2,332,076	
06	RECENT PERIOD	17,689,189	5,887,428	9,195,490	2,605,271	GAIN 4,818,777 ACRES = 80% OF STATE GAIN
07		18,507,585	5,868,997	9,427,188	3,211,400	
08		18,472,022	5,662,189	9,292,661	3,517,173	
09		19,065,292	5,679,932	9,703,215	3,682,145	
1910		19,164,643	5,667,339	9,719,277	3,761,027	
11		18,978,685	5,880,166	9,832,834	3,265,685	
12		19,324,421	5,672,473	10,134,987	3,317,041	
13		19,000,748	5,880,419	10,009,729	3,110,600	
14		20,006,296	5,780,167	10,427,699	3,798,430	
1915		19,201,971	5,160,395	9,389,537	3,652,039	
16		20,704,293	5,987,899	10,530,905	4,175,489	
17		21,131,008	6,030,382	10,676,431	4,424,195	
18		21,234,548	6,240,757	10,710,611	4,283,180	
19		22,094,159	6,384,194	10,889,602	4,810,363	
1920		21,759,497	6,294,868	10,652,051	4,822,578	
21		21,191,583	6,046,762	10,430,829	4,713,992	
22		21,372,382	5,936,478	10,335,190	5,100,714	
23		21,371,825	5,937,987	10,418,111	5,015,727	
24		21,766,180	5,741,641	10,651,945	5,472,594	
1925		21,342,760	5,485,971	10,228,529	5,628,260	
26		21,499,445	5,416,636	10,696,602	5,386,227	
27		21,909,979	5,416,671	10,742,531	5,730,777	
28		22,690,108	5,382,318	10,902,660	6,405,130	
29		22,845,971	5,344,160	10,766,371	6,755,440	
1930		23,547,668	5,416,559	11,000,246	7,130,883	
		GAIN 8,902,337 ACRES DURING EARLY PERIOD	GAIN 1,409,812 ACRES = 18% OF STATE GAIN	GAIN 3,115,400 ACRES = 38% OF STATE GAIN	GAIN 2,117,125 ACRES = 24% OF STATE GAIN	
		GAIN 6,008,918 ACRES DURING RECENT PERIOD	LOSS 597,962 ACRES = 10% OF STATE GAIN	GAIN 1,788,103 ACRES = 30% OF STATE GAIN		

PLATE III

ACRES OF FIELD CROPS IN CENTRAL KANSAS

REPORTED BY
KANSAS STATE BOARD AGRICULTURE

SUMMARIZED BY
C. L. PATTERSON, CIVIL ENG.

YEAR		LOCATION OF COUNTIES WITH RESPECT TO ARKANSAS RIVER BASIN		LOCATION OF COUNTIES WHOLLY OR IN PART INSIDE OF BASIN RELATIVE TO CHANNEL OF ARKANSAS RIVER		NOTES
		ENTIRELY OUTSIDE "A"	WHOLLY OR PARTLY INSIDE "B"	OFF CHANNEL "D"	ON CHANNEL "C"	
1881	EARLY PERIOD	2,029,596	2,067,147	934,938	1,132,209	ALL ACREAGES ARE EXCLUSIVE OF PRAIRIE GRASS GROUP A PLUS GROUP B = TOTAL FOR DIVISION GROUP C PLUS GROUP D = GROUP B.
82		2,036,837	2,154,189	1,028,935	1,125,253	
83		2,085,101	2,054,723	928,980	1,125,743	
84		2,251,983	2,331,388	1,083,748	1,255,140	
1885		2,001,520	2,212,356	1,001,632	1,210,724	
86		2,376,087	2,414,834	1,147,306	1,267,528	
87		1,627,178	1,916,251	948,170	968,081	
88		2,116,195	2,234,014	1,032,979	1,201,035	
89		2,362,282	2,930,735	1,418,299	1,512,446	
1890		1,392,527	1,972,018	975,297	996,719	
91						
92						
93		3,684,272	3,867,814	1,849,616	2,017,698	DIVISION GAIN 5,115,400 ACRES EARLY PERIOD
94		3,542,053	3,762,435	1,845,922	2,016,813	
1895		4,219,176	4,468,767	2,065,756	2,402,951	
96		3,765,434	4,123,306	1,941,589	2,181,717	
97		3,823,763	4,085,530	1,900,298	2,185,232	
98		3,871,426	4,254,987	2,006,320	2,248,667	
99		4,271,604	4,634,830	2,183,449	2,453,381	
1900		3,958,947	4,363,576	2,069,959	2,293,617	
01		4,110,532	4,488,199	2,158,069	2,330,130	
02		4,302,340	4,730,123	2,287,025	2,448,098	
03		4,684,526	4,988,185	2,324,445	2,653,740	
04		4,269,791	4,724,791	2,272,494	2,454,435	
1905		4,364,584	4,847,559	2,346,343	2,501,216	
06	RECENT PERIOD	4,343,000	4,852,490	2,355,104	2,497,386	DIVISION GAIN 1,788,103 ACRES RECENT PERIOD
07		4,408,916	5,018,272	2,425,313	2,592,959	
08		4,348,281	4,944,350	2,407,309	2,537,071	
09		4,558,786	5,144,429	2,539,740	2,604,689	
1910		4,572,765	5,146,512	2,543,606	2,602,906	
11		4,607,820	5,225,014	2,584,132	2,640,882	
12		4,739,183	5,385,724	2,671,866	2,723,323	
13		4,909,454	5,200,278	2,630,629	2,569,644	
14		4,927,934	5,499,365	2,718,731	2,781,134	
1915		4,583,310	4,836,227	2,453,410	2,382,817	
16		4,963,172	5,567,733	2,781,390	2,786,343	
17		5,119,635	5,556,796	2,769,801	2,786,995	
18		5,082,425	5,658,186	2,763,888	2,894,298	
19		5,156,430	5,743,172	2,837,352	2,905,820	
1920		5,004,061	5,647,990	2,802,029	2,845,961	
21		4,923,375	5,507,454	2,746,522	2,760,932	
22		4,848,035	5,487,155	2,697,194	2,789,961	
23		4,922,257	5,495,854	2,758,236	2,737,598	
24		4,969,983	5,581,962	2,823,352	2,758,610	
1925		4,524,870	5,703,659	2,808,852	2,894,807	
26		4,958,657	5,737,945	2,835,315	2,902,630	
27		5,108,028	5,654,503	2,847,036	2,807,467	
28		5,177,048	5,725,612	2,875,409	2,850,203	
29		5,091,428	5,674,943	2,814,231	2,860,712	
1930		5,160,295	5,859,951	2,905,243	2,954,708	

GAIN 2,334,988 ACRES = 46% OF DIVISION GAIN

GAIN 2,780,412 ACRES, 54% OF DIVISION GAIN

GAIN 1,344,007 ACRES = 46% OF GROUP B GAIN

GAIN 1,411,405 ACRES = 51% OF GROUP B GAIN

GAIN 195,711 ACRES = 45% OF DIVISION GAIN

GAIN 992,392 ACRES = 55% OF DIVISION GAIN

GAIN 453,442 ACRES = 46% OF GROUP B GAIN

GAIN 538,950 ACRES = 54% OF GROUP B GAIN

PLATE 14

ACRES OF FIELD CROPS IN WESTERN KANSAS

REPORTED BY
KANSAS STATE BOARD AGRICULTURE.

SUMMARIZED BY
C. L. PATTERSON, CIVIL ENG.

YEAR		LOCATION RELATIVE TO ARKANSAS RIVER BASIN		COUNTIES WHOLLY OR PARTLY INSIDE LOCATION RELATIVE TO CHANNEL OF ARKANSAS RIVER		
		ENTIRELY OUTSIDE "A"	WHOLLY OR PARTLY INSIDE "B"	OFF CHANNEL "D"	ON CHANNEL "C"	All Acreages are exclusive of irrigated acreage. Group A plus Group B: Total of Western Division. Group C plus Group D: Group B.
1881	EARLY PERIOD	118,706	34,245	31,405	3,840	GAIN 79 ACRES PER SQUARE MILE OF DIVISION AREA
82		130,453	45,115	35,870	29,248	
83		122,793	38,814	28,543	9,273	
84		110,897	37,404	26,177	11,227	
1885		131,961	46,216	32,822	13,394	
86		319,849	84,508	53,444	31,064	
87		341,199	109,915	68,299	41,616	
88		425,458	230,435	183,420	57,215	
89		303,335	348,309	224,093	144,216	
1890		476,401	240,428	150,398	90,027	
91						
92						
93						
94		1,399,124	634,124	416,695	217,429	GAIN 53 ACRES PER SQUARE MILE OF GROUP AREA
1895		1,351,633	615,724	399,484	216,240	
96		1,272,282	524,534	385,457	139,348	
97		1,038,332	525,074	363,364	161,710	
98		1,029,654	450,831	308,344	141,487	
99		1,166,022	477,026	328,537	148,138	
1900		1,317,921	465,551	310,741	154,810	
01		1,305,693	449,099	290,063	159,036	
02		1,408,557	518,347	343,083	175,264	
03		1,471,869	544,343	370,018	166,325	
04		1,510,180	584,658	369,203	217,455	
1905		1,468,909	619,166	378,228	240,938	
		1,601,237	730,939	456,716	274,123	
06	RECENT PERIOD	1,762,269	842,402	550,178	312,224	GAIN 174 ACRES PER SQUARE MILE OF DIVISION AREA
07		2,136,291	1,075,109	657,723	417,386	
08		2,299,752	1,217,421	728,451	488,970	
09		2,487,405	1,194,740	660,259	534,481	
1910		2,588,291	1,179,746	660,734	519,012	
11		2,231,458	1,034,232	524,105	510,127	
12		2,299,540	1,017,501	482,128	535,373	
13		2,224,824	993,776	507,496	486,282	GAIN 332%
14		2,573,733	1,224,497	656,590	568,107	
1915		2,539,320	1,112,719	542,547	570,172	
16		2,862,474	1,313,015	659,011	654,004	
17		2,962,577	1,461,613	730,027	731,531	
18		2,910,455	1,372,727	710,387	662,340	
19		3,232,291	1,578,032	796,280	781,802	
1920		3,209,122	1,613,456	815,441	797,985	
21		3,099,272	1,614,720	849,424	765,296	
22		3,388,736	1,711,978	814,100	897,878	
23		3,342,037	1,673,690	909,620	764,070	
24		3,606,601	1,845,993	1,030,561	815,432	
1925		3,642,228	1,934,032	1,099,984	834,048	
26		3,296,183	2,090,044	1,191,696	898,348	
27		3,695,395	2,035,382	1,133,736	901,646	
28		4,091,239	2,313,841	1,303,218	1,010,626	
29		4,149,740	2,608,700	1,508,228	1,097,472	
1930		4,335,617	2,815,234	1,629,688	1,186,551	

GAIN 94 ACRES PER SQUARE MILE OF GROUP AREA

GAIN 176 ACRES PER SQUARE MILE OF GROUP AREA

GAIN 175 ACRES PER SQUARE MILE OF GROUP AREA

GAIN 178 ACRES PER SQUARE MILE OF GROUP AREA

GAIN 171%

GAIN 288%

GAIN 257%

DIVISION GAIN 204% RECENT PERIOD

VALUES OF AGRICULTURAL PRODUCTS OF KANSAS

DATA REPORTED BY KANSAS STATE BOARD AGRICULTURE.

ARRANGED AND AVERAGED BY
C. L. PATTERSON, CIVIL ENGINEER

YEAR	TOTAL VALUE OF ALL AGRICULTURAL PRODUCTS (a)		TOTAL VALUE OF THE FIELD CROPS (b)		TOTAL VALUE OF ALL OTHER PRODUCTS (c)		NOTES.
1881	$ 115,943,985		$ 88,692,222		$ 30,301,763		(a) ALL FIGURES ARE ABSTRACTED FROM SUMMARIES BY KANSAS STATE BOARD OF AGRICULTURE.
82	138,065,465	$ 131,725,300	100,676,978	$ 84,439,400	37,388,487	$ 47,316,900	(b) FIELD CROPS ARE WHEAT, CORN, OATS, RYE, BARLEY, POTATOES, COWPEAS, SORGHUMS, FLAX, COTTON, BROOM CORN, MILLET, SUGAR BEETS, PINTO BEANS, SORGHUMS, MILO, KAFIR, PETERITA, SUDAN GRASS, ALFALFA, TIMOTHY, CLOVER, ETC., BUT NOT PRAIRIE GRASS.
83	142,210,318		93,533,984		48,676,324		
84	147,374,613		84,498,598		62,885,019		
1885	122,814,994		74,581,262		48,233,732		
86	124,742,763		76,672,629		48,070,134		
87	114,923,782		65,301,742		49,622,040		
88	143,257,768		96,112,571		47,145,197		
89	147,081,496		96,762,997		50,288,499		
1890	121,127,645		70,568,646		50,557,989		
91	169,810,850		117,633,119		52,177,731		
92	164,648,947	$ 144,108,400	111,355,850	$ 87,328,000	53,293,097	$ 58,780,400	
93	122,570,537		63,676,908		58,899,629		
94	113,335,891		55,418,159		57,957,702		
1895	128,563,784		74,202,387		54,361,387		
96	116,290,011		65,422,844		50,867,145		
97	136,335,263		83,407,394		52,927,874		
98	151,973,828		86,888,108		65,068,720		
99	169,845,257		102,029,996		67,815,291		
1900	187,784,406		113,285,386		74,511,019		
01	195,284,683		108,995,568		86,289,085		
02	216,002,055	$ 248,597,200	144,781,843	$ 153,784,500	71,220,212	$ 94,842,700	
03	223,984,499		144,515,585		79,468,914		
04	208,406,366		134,631,896		73,774,470		
1905	238,334,425		158,589,054		80,247,371		
06	246,905,081		156,305,858		90,599,193		
07	266,387,750		157,236,771		109,160,979		
08	277,733,953		183,564,573		94,169,380		
09	307,538,165		207,600,245		99,937,920		
1910	304,914,342		191,323,126		113,591,216		
11	282,927,188		162,982,644		119,944,542		
12	324,988,943	$ 448,500,500	221,251,144	$ 316,925,700	103,737,799	$ 131,574,800	
13	241,470,426		123,060,417		118,410,009		
14	376,297,713		275,892,860		100,705,153		
1915	342,843,467		243,449,493		99,393,974		
16	371,188,476		265,559,220		105,629,256		
17	507,493,787		378,039,967		129,443,320		
18	592,017,249		430,021,143		161,996,106		
19	746,619,135		548,603,969		198,015,166		
1920	699,170,341		520,696,841		178,473,500		
21	351,121,242		215,995,639		135,125,603		
22	357,286,774	$ 451,435,000	240,467,933	$ 291,282,500	116,788,841	$ 160,152,500	
23	384,727,510		252,936,996		131,990,514		
24	501,629,564		371,780,794		129,869,772		
1925	418,748,849		274,781,645		143,967,224		
26	469,488,853		310,524,593		158,964,265		
27	504,004,586		341,120,948		162,883,621		
28	537,429,753		377,356,694		160,073,059		
29	548,421,056		305,048,647		243,352,409		
1930	441,322,240		222,811,300		218,710,940		(c) LIVESTOCK, POULTRY, DAIRY, HORTICULTURAL AND OTHER PRODUCTS.

PLATE 23

VALUES OF THE KANSAS FIELD CROPS BY STATE DIVISIONS

REPORTED BY COUNTIES
BY KANSAS STATE BOARD OF AGRICULTURE
SUMMARIES BY C. L. PATTERSON, CIVIL ENG.

YEAR	WHOLE STATE OF KANSAS		EASTERN DIVISION		CENTRAL DIVISION		WESTERN DIVISION	
	dollars		dollars		dollars		dollars	
1881	$ 91,928,376		$ 47,304,270		$ 43,478,240		$ 1,145,866	
82	108,177,818		58,092,940		48,354,460		1,730,118	
83	93,465,151	$ 85,576,000	48,030,050	$ 42,582,000	44,482,050	$ 36,587,000	953,021	$ 3,437,000
84	83,840,923		42,607,600		40,073,116		1,160,213	
1885	73,877,167		36,717,180		35,387,150		1,772,837	
86	76,689,238		37,170,230		35,468,650		4,050,358	
87	65,282,262		33,218,890		27,591,090		4,473,282	
88	96,113,900		49,889,490		38,512,300		7,712,110	
89	96,234,930		36,837,320		52,438,960		6,958,650	
1890	70,148,683		38,953,000		29,785,730		4,409,953	
91	117,600,000		63,560,000		47,000,000		7,100,000	
92	111,400,000		60,200,000		44,500,000		6,700,000	
93	63,529,000	$ 37,406,000	36,261,220	$ 41,445,000	23,579,120	$ 39,945,000	3,688,670	$ 5,976,000
94	56,635,663		33,732,960		18,978,840		2,923,863	
1895	74,109,796		39,420,980		29,080,750		5,608,066	
96	68,307,183		28,431,760		33,394,890		3,480,535	
97	83,407,394		29,080,174		47,089,160		7,238,060	
98	86,885,109		35,504,121		45,398,850		7,952,138	
99	102,030,095		42,246,380		52,799,960		6,983,755	
1900	113,285,386		48,274,909		57,826,850		8,150,627	
01	108,995,563		37,346,474		62,212,000		9,437,094	
02	144,781,843	$ 158,764,000	69,653,432	$ 54,828,000	65,417,530	$ 85,384,000	9,710,881	$ 18,042,000
03	144,515,585		46,824,336		79,082,359		18,608,890	
04	134,631,896		36,457,214		86,113,282		12,061,400	
1905	158,589,064		56,748,777		81,880,702		19,959,575	
06	156,305,858		55,695,944		82,828,937		17,780,955	
07	157,236,771		59,844,312		79,059,550		18,332,909	
08	183,564,873		57,196,790		107,363,620		19,004,163	
09	207,600,245		66,814,425		112,361,140		28,424,680	
1910	191,323,126		61,695,926		102,524,540		27,102,660	
11	162,982,644		61,621,242		86,490,400		14,811,004	
12	221,251,144	$ 316,926,000	78,513,209	$ 106,724,000	121,497,440	$ 155,682,000	21,178,495	$ 51,520,000
13	123,060,417		44,256,766		66,985,130		11,818,521	
14	275,502,560		80,131,362		148,919,000		46,541,198	
1915	243,449,493		69,747,598		127,270,810		46,431,085	
16	265,559,220		71,233,331		136,309,950		58,015,939	
17	378,039,967		164,292,531		176,691,520		37,055,916	
18	430,021,143		156,453,537		221,303,750		52,263,806	
19	548,603,969		182,551,159		254,392,080		111,660,730	
1920	520,696,841		158,318,571		247,960,620		114,417,650	
21	215,995,659	$ 291,253,000	61,136,329	$ 86,219,000	114,448,780	$ 141,382,000	40,390,030	$ 63,652,000
22	240,447,933		73,515,713		118,943,920		48,008,300	
23	282,936,996		80,013,316		115,212,110		57,711,570	
24	371,759,794		112,620,174		179,091,730		80,047,390	
1925	274,781,645		101,040,235		118,533,010		55,208,400	
26	310,524,593		87,790,573		163,235,120		59,498,900	
27	341,120,965		105,743,215		183,024,680		49,355,070	
28	377,356,694		101,965,774		183,013,190		92,377,730	
29	385,068,647		77,164,397		135,291,810		92,612,440	
1930	222,311,300		58,196,150		103,001,030		61,614,120	

PLATE 25

VALUES OF FIELD CROPS PRODUCED IN CENTRAL KANSAS

DATA REPORTED BY COUNTIES
BY KANSAS STATE BOARD OF AGRICULTURE

ARRANGED AND SUMMARIZED BY
C. L. PATTERSON, CIVIL ENG.

YEAR	LOCATION OF COUNTIES RELATIVE TO ARKANSAS RIVER BASIN				LOCATION OF COUNTIES RELATIVE TO CHANNEL OF ARKANSAS RIVER				NOTES
	19 COUNTIES ENTIRELY OUTSIDE		15 COUNTIES WHOLLY OR PARTLY INSIDE		10 COUNTIES NOT ON CHANNEL		8 COUNTIES CROSSED BY CHANNEL		
	dollars		dollars		dollars		dollars		
1881	18,543,060		24,935,180		10,705,750		14,231,430		
82	22,124,070		26,230,390		12,342,880		13,537,510		
83	19,912,060	$ 18,449,700	24,570,020	$ 21,107,400	11,129,470	$ 9,737,200	13,440,550	$ 11,370,200	
84	19,441,700		20,131,410		9,215,220		10,913,190		
1885	17,152,170		18,234,930		8,023,930		10,211,050		
86	17,690,060		17,778,590		8,571,150		9,297,410		
87	12,043,370		15,847,720		7,270,380		8,277,420		
88	19,347,990		19,164,310		8,690,940		10,473,370		
89	25,525,780		26,913,180		12,672,210		14,240,970		
1890	12,216,860		17,866,170		8,698,520		8,869,480		
91									
92									
93	11,008,060	$ 17,342,400	12,571,060	$ 20,676,200	5,892,880	$ 9,904,600	6,768,180	$ 10,771,400	
94	9,093,020		10,885,820		5,147,740		5,738,080		
1895	12,647,280		16,413,460		8,120,038		8,293,421		
96	16,536,490		16,840,400		8,423,219		8,417,581		
97	21,926,380		25,162,770		11,332,680		13,830,090		
98	20,229,230		25,169,620		12,175,300		12,944,320		
99	27,093,340		25,706,620		12,432,110		13,274,510		
1900	25,169,420		32,660,430		15,803,630		16,850,680		
01	26,868,800		33,343,200		15,824,340		19,318,860		
02	30,304,230		34,913,300		16,477,370		18,435,730		
03	40,210,864	$ 40,271,000	38,871,795	$ 45,613,000	18,748,206	$ 22,139,700	20,123,889	$ 23,473,300	
04	40,635,860		45,477,472		20,420,047		25,057,375		
1905	38,745,608		42,135,094		19,566,217		22,568,577		
06	37,311,281		43,517,656		21,377,949		24,139,707		
07	36,115,090		42,941,460		22,100,190		20,841,270		
08	50,457,340		56,576,230		28,317,890		29,558,640		
09	49,701,580		63,659,560		29,592,900		33,066,660		
1910	31,129,810		51,306,730		25,931,380		25,463,350		
11	26,036,960		50,455,440		25,588,160		24,867,280		
12	57,647,950	$ 72,953,000	63,849,490	$ 85,719,000	31,760,100	$ 42,105,000.	32,089,390	$ 43,614,000	
13	32,722,400		34,262,730		17,936,260		16,326,470		
14	66,668,570		82,250,430		40,690,360		41,560,070		
1915	66,336,960		60,933,550		31,186,080		29,747,770		
16	67,586,630		67,782,270		34,362,570		33,380,700		
17	68,071,070		108,620,450		53,517,400		55,103,050		
18	84,008,290		137,295,460		65,646,300		71,648,460		
19	120,860,950		133,331,130		64,375,536		69,155,600		
1920	129,620,640		113,238,380		53,982,330		62,267,650		
21	31,308,920		63,159,860		31,649,470		31,510,390		
22	50,916,090	$ 63,743,000	68,027,830	$ 77,639,000	34,052,320	$ 38,506,000	33,975,510	$ 39,133,000	
23	59,186,650		56,025,460		29,750,340		26,275,120		
24	80,303,090		98,788,640		49,838,520		49,950,120		
1925	44,804,530		73,728,490		35,124,530		38,603,900		
26	55,207,620		108,027,620		51,963,430		56,064,190		
27	87,969,450		95,083,230		48,188,410		46,864,820		
28	90,413,360		92,599,830		45,677,510		46,922,320		
29	66,302,090		68,989,730		34,374,960		34,614,770		
1930	51,014,760		51,936,270		28,443,280		26,542,890		

PLATE 25

VALUES OF FIELD CROPS PRODUCED IN WESTERN KANSAS

DATA REPORTED BY COUNTIES BY
KANSAS STATE BOARD OF AGRICULTURE

ARRANGED AND SUMMARIZED BY
C.L. PATTERSON, CIVIL ENGINEER

YEAR	LOCATION OF COUNTIES RELATIVE TO ARKANSAS RIVER BASIN				LOCATION OF COUNTIES RELATIVE TO CHANNEL OF ARKANSAS RIVER				NOTES
	17 COUNTIES ENTIRELY OUTSIDE		14 COUNTIES WHOLLY OR PART INSIDE		9 COUNTIES NOT ON CHANNEL		5 COUNTIES CROSSED BY CHANNEL		
	dollars		dollars		dollars		dollars		
1881	$ 661,155		$ 484,731		$ 440,217		$ 44,514		
82	799,852		930,266		727,447		202,819		
83	669,226	$ 2,274,000	283,795	$ 1,165,000	214,605	$ 736,000	69,190	$ 429,000	
84	813,885		286,328		171,944		114,384		
1885	1,181,037		591,300		386,737		205,043		
86	3,110,630		939,728		574,197		365,531		
87	3,258,921		1,214,361		760,511		453,850		
88	5,467,330		2,244,736		1,466,600		778,136		
89	4,500,281		2,455,349		1,405,246		053,103		
1890	2,209,030	—	2,200,923	—	1,203,448	—	997,475	—	
91									
92									
93	2,599,153	$ 3,937,600	1,089,517	$ 1,804,900	531,643	$ 1,028,000	557,849	$ 778,900	
94	1,603,971		1,219,892		492,343		527,549		
1895	3,322,672		1,785,394		1,064,818		720,576		
96	2,427,964		1,052,571		544,520		486,051		
97	4,999,220		2,238,840		1,406,250		832,590		
98	5,753,490		2,198,448		1,290,500		907,948		
99	5,031,175		1,952,550		1,011,748		940,832		
1900	5,263,004	—	2,917,623	—	1,659,746	—	1,257,877	—	
01	6,003,381		3,433,206		1,706,791		1,726,415		
02	7,062,092		2,648,789		1,313,643		1,335,146		
03	13,402,916	$ 12,404,900	5,205,974	$ 5,637,500	3,406,266	$ 2,780,600	1,799,709	$ 2,856,900	
04	8,979,976		3,081,424		1,783,419		1,328,005		
1905	14,453,535		5,506,040		3,186,113		2,319,927		
06	12,606,610		5,174,348		2,894,421		2,279,924		
07	11,345,600		6,437,309		3,034,965		3,402,344		
08	12,748,130		6,256,033		2,366,612		3,879,421		
09	16,809,920		8,614,760		3,879,117		4,735,643		
1910	17,086,210	—	10,016,450	—	4,264,221	—	5,752,228	—	
11	8,677,429		6,133,575		2,275,838		3,857,737		
12	10,833,097		10,295,393		4,192,166		6,103,232		
13	8,341,444	$ 35,021,100	3,277,077	$ 16,498,400	589,996	$ 7,535,100	2,717,081	$ 8,963,300	
14	29,978,330		16,843,818		8,495,892		8,667,926		
1915	31,805,450		14,625,635		6,971,434		7,654,201		
16	41,468,470		17,547,464		7,356,137		10,191,332		
17	23,571,130		13,494,796		8,208,689		5,276,127		
18	35,405,190		16,888,616		8,279,939		8,578,677		
19	79,073,140		32,587,890		14,384,050		18,203,840		
1920	80,804,320	—	33,612,530	—	17,627,000	—	15,985,530	—	
21	25,784,130		14,605,900		7,259,610		7,346,290		
22	32,770,320	$ 38,332,900	15,237,780	$ 24,329,400	7,085,370	$ 12,545,000	8,152,410	$ 12,215,480	
23	38,212,350		19,498,720		11,094,400		8,444,320		
24	49,934,780		30,093,110		15,250,100		14,843,010		
1925	36,149,900		19,088,500		8,720,250		10,338,250		
26	23,439,630		31,089,270		13,135,020		17,324,250		
27	32,214,350		17,138,720		8,344,920		8,793,800		
28	53,276,710		29,101,020		20,500,740		15,600,280		
29	52,207,480		40,404,960		21,373,670		19,031,290		
1930	39,517,860	—	22,094,260	—	12,046,060	—	10,050,200	—	

PLATE 27

SUMMARY BY DECADES OF THE VALUES AND ACRES OF THE FIELD CROPS OF KANSAS.

DATA REPORTED BY KANSAS STATE BOARD OF AGRICULTURE. SUMMARIES BY C. L. PATTERSON, CIVIL ENGINEER

PLATE 27

		DECADES →	1881-1890	1891-1900	1901-1910	1911-1920	1921-1930	50 YR AVG.
STATE OF KANSAS 105 COUNTY TOTALS		VALUES	$ 85,760,080	$ 80,556,480	$ 158,754,000	$ 316,926,000	$ 291,283,000	
		ACRES	9,212,714	15,847,191	17,963,132	20,223,543	21,957,791	
		PER ACRE	$ 9.32	$ 5.08	$ 8.84	$ 15.70	$ 13.26	$ 10.44
EASTERN DIVISION 37 COUNTY TOTALS		VALUES	$ 42,582,808	$ 36,273,300	$ 54,828,000	$ 106,724,000	$ 86,219,000	
		ACRES	4,484,207	5,988,004	5,951,950	5,931,173	5,612,519	
		PER ACRE	$ 9.33	$ 6.05	$ 9.20	$ 17.98	$ 15.36	$ 11.62
CENTRAL DIVISION	CENTRAL DIVISION 37 COUNTY TOTALS	VALUES	$ 39,557,000	$ 38,515,600	$ 85,884,000	$ 158,682,000	$ 141,382,000	
		ACRES	4,306,445	8,060,944	9,284,545	10,325,430	10,669,301	
		PER ACRE	$ 9.19	$ 4.78	$ 9.25	$ 15.37	$ 13.33	$ 10.38
	19 COUNTY TOTALS OUTSIDE OF BASIN	VALUES	$ 18,449,708	$ 17,542,400	$ 40,271,000	$ 72,853,000	$ 63,743,000	
		ACRES	2,074,930	3,592,110	4,396,360	4,892,330	4,968,400	
		PER ACRE	$ 8.89	$ 4.88	$ 9.16	$ 14.90	$ 12.83	$ 10.07
	18 COUNTY TOTALS INSIDE OF BASIN	VALUES	$ 21,107,400	$ 20,676,200	$ 45,613,000	$ 85,719,000	$ 77,639,000	
		ACRES	2,229,500	4,207,840	4,888,200	5,433,100	5,640,900	
		PER ACRE	$ 9.45	$ 4.91	$ 9.34	$ 15.80	$ 13.77	$ 10.65
	10 COUNTY TOTALS NOT ON CHANNEL	VALUES	$ 9,737,200	$ 9,904,800	$ 22,134,700	$ 42,105,000	$ 38,306,000	
		ACRES	1,050,020	1,982,870	2,365,930	2,701,330	2,809,140	
		PER ACRE	$ 9.27	$ 5.00	$ 9.34	$ 15.60	$ 13.70	$ 10.58
	8 COUNTY TOTALS ON CHANNEL	VALUES	$ 11,370,200	$ 10,771,400	$ 23,473,300	$ 43,614,000	$ 36,133,000	
		ACRES	1,179,450	2,224,970	2,522,270	2,781,770	2,831,760	
		PER ACRE	$ 9.63	$ 4.84	$ 9.34	$ 15.90	$ 13.83	$ 10.71
WESTERN DIVISION	WESTERN DIVISION 31 COUNTY TOTALS	VALUES	$ 3,437,080	$ 5,744,500	$ 18,042,000	$ 51,520,000	$ 63,682,000	
		ACRES	451,062	1,784,243	2,716,617	3,965,960	5,735,971	
		PER ACRE	$ 7.62	$ 3.26	$ 6.65	$ 13.00	$ 11.10	$ 8.32
	17 COUNTY TOTALS OUTSIDE OF BASIN	VALUES	$ 2,274,000	$ 3,937,600	$ 12,404,900	$ 35,021,100	$ 38,852,800	
		ACRES	320,132	1,241,461	1,863,534	2,704,576	3,664,707	
		PER ACRE	$ 7.10	$ 3.17	$ 6.66	$ 12.94	$ 10.60	$ 8.09
	14 COUNTY TOTALS INSIDE OF BASIN	VALUES	$ 1,163,000	$ 1,806,900	$ 5,637,500	$ 16,498,400	$ 24,829,200	
		ACRES	130,930	517,782	853,083	1,261,384	2,071,264	
		PER ACRE	$ 8.89	$ 3.48	$ 6.61	$ 13.10	$ 12.00	$ 8.82
	9 COUNTY TOTALS NOT ON CHANNEL	VALUES	$ 735,000	$ 1,028,000	$ 2,780,600	$ 7,535,100	$ 12,544,000	
		ACRES	84,647	344,246	509,459	631,610	1,160,922	
		PER ACRE	$ 8.69	$ 2.99	$ 5.46	$ 11.93	$ 10.80	$ 7.97
	5 COUNTY TOTALS ON CHANNEL	VALUES	$ 428,000	$ 778,900	$ 2,856,900	$ 8,963,300	$ 12,285,400	
		ACRES	46,283	173,536	343,622	629,974	910,342	
		PER ACRE	$ 9.25	$ 4.48	$ 8.31	$ 14.23	$ 13.50	$ 9.95

PLATE 28

TOTAL ASSESSED VALUATIONS OF ALL PROPERTY IN KANSAS

DATA REPORTED BIENNIALLY BY COUNTIES BY THE KANSAS-STATE BOARD AGRICULTURE
ARRANGED AND AVERAGED BY C. L. PATTERSON, CIVIL ENGINEER

VALUATIONS SHOWN ARE AVERAGED BY DECADES

	FIRST DECADE 1882-1890	SECOND DECADE 1894-1900	THIRD DECADE 1902-1910	FOURTH DECADE 1912-1920	FIFTH DECADE 1922-1930
TOTALS FOR 105 COUNTIES COMPRISING WHOLE STATE OF KANSAS dollars	$ 280,032,000	$ 330,188,000	$ 1,267,432,000	$ 3,164,179,000	$ 3,663,206,000
PERCENT OF FIRST DECADE	100%	122%	452%	250%	299%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 37 COUNTIES COMPRISING EASTERN DIVISION dollars	$ 151,876,000	$ 174,228,000	$ 607,603,000	$ 1,422,417,000	$ 1,639,678,000
PERCENT OF FIRST DECADE	100%	115%	400%	234%	270%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 37 COUNTIES COMPRISING CENTRAL DIVISION dollars	$ 107,919,000	$ 122,600,000	$ 543,017,000	$ 1,445,582,000	$ 1,649,670,000
PERCENT OF FIRST DECADE	100%	114%	504%	266%	304%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 29 COUNTIES NOT ON CHANNEL OF ARKANSAS RIVER	$ 72,256,000	$ 84,153,000	$ 368,519,000	$ 981,619,000	$ 1,076,600,000
PERCENT OF FIRST DECADE	100%	117%	510%	266%	292%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 8 COUNTIES CROSSED BY CHANNEL OF ARKANSAS RIVER	$ 35,663,000	$ 38,447,000	$ 174,498,000	$ 463,963,000	$ 573,070,000
PERCENT OF FIRST DECADE	100%	108%	476%	266%	328%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 31 COUNTIES COMPRISING WESTERN DIVISION dollars	$ 20,237,000	$ 33,360,000	$ 116,812,000	$ 296,180,000	$ 373,858,000
PERCENT OF FIRST DECADE	100%	165%	577%	254%	320%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 26 COUNTIES NOT ON CHANNEL OF ARKANSAS RIVER	$ 15,342,000	$ 27,150,000	$ 93,734,000	$ 231,895,000	$ 293,505,000
PERCENT OF FIRST DECADE	100%	176%	610%	247%	313%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 5 COUNTIES CROSSED BY CHANNEL OF ARKANSAS RIVER	$ 4,845,000	$ 6,210,000	$ 23,078,000	$ 64,285,000	$ 80,353,000
PERCENT OF FIRST DECADE	100%	128%	476%	279%	350%
PERCENT OF THIRD DECADE			100%		

Colo. Ex. 69

PLATE 29

ASSESSED VALUATIONS of the VARIOUS CLASSES of PROPERTY in KANSAS

PLATE 29

DATA REPORTED BIENNIALLY BY THE KANSAS STATE BOARD OF AGRICULTURE
ARRANGED AND AVERAGED BY C. L. PATTERSON, CIVIL ENGINEER

	County Groups	LANDS.	LOTS	PERSONAL	PUB. SER. CORP.	TOTALS
First Decade 1862-1869	WHOLE STATE	$ 137,281,000	$ 52,685,000	$ 51,072,000	$ 39,074,000	$ 280,032,000
	EASTERN DIVISION	72,544,000	29,621,000	29,491,000	20,260,000	151,876,000
	CENTRAL DIVISION	53,391,000	20,666,000	19,128,000	14,588,000	107,916,000
	WESTERN DIVISION	11,377,000	2,538,000	2,452,000	3,830,000	20,237,000
Second Decade 1864-1900	WHOLE STATE	$ 166,283,000	$ 59,724,000	$ 45,082,000	$ 58,173,000	$ 330,158,000
	EASTERN DIVISION	78,093,000	40,505,000	25,906,000	29,724,000	174,228,000
	CENTRAL DIVISION	66,694,000	17,415,000	16,174,000	22,317,000	122,600,000
	WESTERN DIVISION	21,453,000	1,791,000	2,976,000	7,119,000	33,360,000
Third Decade 1902-1910	WHOLE STATE	$ 617,857,000	$ 200,704,000	$ 245,738,000	$ 203,133,000	$ 1,267,432,000
	EASTERN DIVISION	257,418,000	124,955,000	117,663,000	107,567,000	607,603,000
	CENTRAL DIVISION	291,791,000	69,417,000	107,861,000	73,948,000	543,017,000
	WESTERN DIVISION	68,648,000	6,333,000	20,212,000	21,619,000	116,812,000
Fourth Decade 1912-1920	WHOLE STATE	$ 1,529,896,000	$ 473,895,000	$ 712,250,000	$ 448,138,000	$ 3,164,179,000
	EASTERN DIVISION	607,031,000	271,287,000	311,674,000	232,435,000	1,422,417,000
	CENTRAL DIVISION	754,896,000	185,772,000	336,191,000	169,723,000	1,445,582,000
	WESTERN DIVISION	167,949,000	16,886,000	64,385,000	46,960,000	296,180,000
Fifth Decade 1922-1930	WHOLE STATE	$ 1,732,255,000	$ 627,011,000	$ 743,945,000	$ 559,995,000	$ 3,663,206,000
	EASTERN DIVISION	679,691,000	336,957,000	328,024,000	295,006,000	1,639,678,000
	CENTRAL DIVISION	826,169,000	261,832,000	349,553,000	212,115,000	1,649,670,000
	WESTERN DIVISION	226,429,000	28,217,000	66,368,000	52,849,000	373,858,000

Colo. Ex. 70

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PLATE 30

ASSESSED VALUATIONS OF THE LANDS IN THE STATE OF KANSAS

DATA REPORTED BIENNIALLY BY COUNTIES BY THE KANSAS STATE BOARD OF AGRICULTURE
THE VALUATIONS OF CITY, PERSONAL, AND UTILITY PROPERTIES NOT INCLUDED

ARRANGED AND AVERAGED BY C. L. PATTERSON, CIVIL ENGINEER

ALL VALUATIONS SHOWN ARE IN DOLLARS AND ARE AVERAGES BY DECADES	FIRST DECADE 1882-1890	SECOND DECADE 1894-1900	THIRD DECADE 1902-1910	FOURTH DECADE 1912-1920	FIFTH DECADE 1922-1930
TOTALS FOR 105 COUNTIES COMPRISING WHOLE STATE OF KANSAS	$ 137,281,000	$ 166,283,000	$ 617,857,000	$ 1,529,896,000	$ 1,732,255,000
PERCENT OF FIRST DECADE	100%	121%	450%	244%	281%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 37 COUNTIES COMPRISING EASTERN DIVISION OF KANSAS	$ 72,584,000	$ 78,093,000	$ 257,418,000	$ 607,051,000	$ 679,691,000
PERCENT OF FIRST DECADE	100%	108%	355%	236%	264%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 37 COUNTIES COMPRISING CENTRAL DIVISION OF KANSAS	$ 58,359,000	$ 66,694,000	$ 291,791,000	$ 754,896,000	$ 826,169,000
PERCENT OF FIRST DECADE	100%	125%	548%	259%	283%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 29 COUNTIES NOT ON CHANNEL OF ARKANSAS RIVER	$ 37,973,000	$ 48,858,000	$ 211,735,000	$ 547,185,000	$ 546,192,000
PERCENT OF FIRST DECADE	100%	129%	560%	253%	281%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 8 COUNTIES CROSSED BY ARKANSAS RIVER CHANNEL	$ 15,386,000	$ 17,836,000	$ 80,056,000	$ 207,711,000	$ 229,977,000
PERCENT OF FIRST DECADE	100%	119%	520%	260%	288%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 31 COUNTIES COMPRISING WESTERN DIVISION OF KANSAS	$ 11,377,000	$ 21,485,000	$ 68,648,000	$ 167,949,000	$ 226,425,000
PERCENT OF FIRST DECADE	100%	189%	603%	245%	330%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 26 COUNTIES NOT ON CHANNEL OF ARKANSAS RIVER	$ 9,175,000	$ 18,182,000	$ 56,259,000	$ 133,583,000	$ 181,448,000
PERCENT OF FIRST DECADE	100%	198%	613%	237%	322%
PERCENT OF THIRD DECADE			100%		
TOTALS FOR 5 COUNTIES CROSSED BY ARKANSAS RIVER CHANNEL	$ 2,202,000	$ 3,301,000	$ 12,389,000	$ 34,366,000	$ 44,960,000
PERCENT OF FIRST DECADE	100%	150%	563%		
PERCENT OF THIRD DECADE					

PLATE 30

POPULATION DATA STATE OF COLORADO
AND
COUNTIES OF SOUTH EASTERN COLORADO
IN BASIN OF THE ARKANSAS RIVER

DATA REPORTED BY U. S. CENSUS BUREAU
TABULATED BY C. L. PATTERSON, CONS. CIVIL ENG.

	AREA SQ. MI.	1930	1920	1910	1905	1900	1890	1880
WHOLE STATE OF COLORADO	103,658	1,035,971	939,629	799,024	669,362	539,700	413,249	194,327
ALL OF STATE EXCEPT 16 COUNTIES IN S. E. COLO. INVOLVED IN ARK. RIVER BASIN	75,119	752,919	670,321	568,384	478,431	388,477	291,609	121,190
ALL 16 COUNTIES OF S. E. COLO. IN ARK RIVER BASIN	28,539	282,872	269,308	230,640	190,931	151,223	121,640	73,137
8 COUNTIES OF S. E. COLO. IN ARK. RIVER BASIN BUT NOT ON MAIN RIVER CHANNEL	17,874	130,693	126,848	107,250	87,456	67,663	52,224	29,056
EL PASO COUNTY	2,121	49,570	44,027	43,321	37,461	31,602	21,339	7,919
LINCOLN COUNTY	2,570	7,850	8,273	5,917	3,422	926	689	-
CHEYENNE COUNTY	1,777	3,723	3,716	3,687	2,094	501	534	-
KIOWA COUNTY	1,798	3,786	3,755	2,899	1,800	701	1,243	-
CUSTER COUNTY	747	2,124	2,472	1,917	2,442	2,937	2,970	8,080
HUERFANO COUNTY	1,500	17,062	16,879	13,320	10,857	8,395	6,882	4,124
LAS ANIMAS COUNTY	4,809	36,008	38,975	33,643	27,743	21,842	17,208	8,903
BACA COUNTY	2,552	10,570	8,721	2,516	1,637	759	1,479	-
8 COUNTIES OF S. E. COLO. ON CHANNEL OF ARK. RIVER	10,665	152,179	142,460	123,390	103,375	83,560	69,396	44,081
LAKE COUNTY	371	4,899	6,630	10,600	14,327	18,054	11,663	23,563
CHAFFEE COUNTY	1,083	8,126	7,753	7,622	7,353	7,085	6,612	6,512
FREMONT COUNTY	1,557	18,896	17,883	18,181	16,909	15,636	9,156	4,735
PUEBLO COUNTY	2,433	66,038	57,638	52,223	43,336	34,148	31,491	7,617
CROWLEY COUNTY	808	5,934	6,383	-	-	-	-	-
OTERO COUNTY	1,259	24,390	22,623	20,201	15,861	11,522	4,192	-
BENT COUNTY	1,524	9,134	9,705	5,043	4,046	3,049	1,313	1,654
PROWERS COUNTY	1,630	14,762	13,845	9,520	6,643	3,766	1,969	-

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Colo. Ex. 73

RATES OF GAIN IN POPULATION

DURING EARLY PERIOD 1880-1905 AND RECENT PERIOD 1905-1930

C. L. Patterson, Corps Civil Engineer.

	AREA SQ. MI.	POPULATION 1880	GAIN 1880 TO 1905 THOUSANDTHS	GAIN 1880 TO 1905 PERCENT	POPULATION 1905	GAIN 1905 TO 1930 INHABITANTS	GAIN 1905 TO 1930 PERCENT	POPULATION 1930
UNITED STATES	3,026,789	50,155,783	33,327,637	67.2 %	83,483,420	38,740,626	46.2 %	122,775,046
STATE OF KANSAS	82,029	996,096 (a)	670,393	67.0 %	1,544,968	306,056	19.8 %	1,851,024
STATE OF COLORADO	103,658	194,327	478,935	246.0 %	673,262	376,529	56.0 %	1,049,791
21 COUNTIES EAST: KANS.	22,736	249,215	330,260	132.6 %	579,475	72,539	12.5 %	652,014
37 " CENT. "	31,449	349,166	215,632	61.7 %	564,798	158,767	27.8 %	723,565
31 " WEST "	27,484	25,564	68,331	267 %	93,895	83,760	89.0 %	177,645
16 " S.E. COLO.	29,539	23,131	117,764	161 %	140,895	81,981	58.2 %	222,876
CENTRAL KANS.								
19 Co's. SMOKY BASIN	18,723	183,713	71,506	38.9 %	255,222	11,947	2.8 %	267,169
18 " INSIDE "	15,884	166,133	148,123	89.2 %	314,276	147,680	47.0 %	461,956
10 " OFF CHANNEL	8,363	76,379	53,962	70.5 %	130,481	27,311	20.9 %	157,852
8 " CHN. "	7,883	89,376	90,721	101.5 %	179,795	128,309	71.5 %	308,104
WESTERN KANS.								
17 Co's. OUTSIDE BASIN	15,798	77,806	88,883	253 %	43,287	42,736	122.5 %	108,943
14 " INSIDE "	11,884	31,750	123,172	388 %	32,872	41,636	133 %	71,902
9 " OFF CHANNEL	6,689	8,932	11,582	248 %	18,514	12,349	96 %	28,863
8 " CHN. "	5,117	2,768	11,896	361 %	15,344	27,675	180 %	43,019
ARK. RIVER BASIN CENT. & WEST. COLO.								
24 Co's. OUTSIDE BASIN	21,621	201,381	116,812	58.2 %	318,193	67,783	18.9 %	385,976
32 " INSIDE "	27,332	173,855	167,501	96.5 %	341,356	188,334	58.2 %	529,690
19 " OFF CHANNEL	15,082	30,511	65,874	218 %	145,985	32,720	22.1 %	178,705
13 " CHN. "	12,300	93,342	101,817	109.1 %	195,159	147,984	75.8 %	343,143
ARK. RIVER BASIN SOUTHEAST COLO.								
27 Co's. OUTSIDE BASIN	18,119	121,180	237,241	195 %	358,421	294,493	57.8 %	652,914
16 Co's. INSIDE "	23,532	73,187	117,744	161 %	190,931	91,941	48.2 %	282,872
8 Co's. OFF CHANNEL	11,576	28,036	28,600	201 %	57,636	93,237	44.8 %	150,873
5 " CHN. "	10,663	29,251	29,364	135 %	103,615	68,756	47.9 %	158,371
5 " " "								
LOWER ARK. RIVER	7,454	9,231	22,418	600 %	26,986	58,562	98 %	122,258

(a) DATA FOR KANSAS YEAR 1885

Colo. Ex.

ACRES OF FIELD CROPS HARVESTED
DURING THE SEASONS OF 1924-1930.
IN THE STATE OF COLORADO AND THE COUNTIES OF ARKANSAS RIVER BASIN.

DATA REPORTED BY COLORADO CO-OPERATIVE CROP REPORTING SERVICE
UNITED STATES DEPT OF AGRICULTURE - BUREAU OF AGRICULTURAL ECONOMICS.

Arranged and Averaged by G. L. PATTERSON, Cons. Civil Eng.

	AREA Sq. Mi.	ACRES OF FIELD CROPS HARVESTED DURING SEASONS SHOWN BELOW: 1930 Acres	1929 Acres	1928 Acres	1927 Acres	1926 Acres	1925 Acres	1924 Acres	AVERAGE DURING SEVEN YEAR PERIOD	AVERAGE NUMBER OF ACRES OF FIELD CROPS HARVESTED PER SQ. MI. OF AREA
WHOLE STATE OF COLORADO	103,658	7,222,530	6,810,920	6,342,100	6,573,000	6,600,000	6,140,000	6,336,000	6,574,930	64
16 COUNTIES S.E. COLO.	28,559	1,305,165	1,632,945	1,385,616	1,347,500	1,355,940	1,402,600	1,543,140	1,554,405	54
8 COUNTIES ARK. RIVER BASIN S.E. COLO. NOT ON CHANNEL OF ARK. RIVER	17,874	1,245,080	1,098,735	916,590	1,014,900	1,029,100	917,500	976,400	1,028,295	58
EL PASO COUNTY	2,121	189,830	177,930	148,250	184,500	190,200	167,000	156,000	175,680	83
LINCOLN "	2,570	245,505	270,120	279,490	252,000	248,000	224,000	223,000	251,730	98
CHEYENNE "	1,777	145,345	123,345	120,736	193,500	166,000	125,000	127,000	135,135	76
KIOWA "	1,798	111,740	90,470	96,000	94,200	105,000	94,000	84,900	96,880	54
CUSTER "	747	28,705	25,495	30,443	29,500	17,900	24,200	21,400	25,386	34
HUERFANO "	1,500	34,385	38,545	28,052	41,900	41,000	34,300	29,000	35,300	24
LAS ANIMAS "	4,209	103,500	94,345	82,130	64,900	90,000	78,000	95,000	82,900	17
BACA "	2,552	366,070	278,745	140,240	192,000	201,000	171,000	211,000	225,260	88
8 COUNTIES ON ARK. RIVER IN SOUTH EAST COLORADO	10,665	560,085	534,210	464,226	535,600	526,840	485,100	566,740	526,110	49
LAKE COUNTY	271	5,085	5,165	7,510	3,000	4,990	4,500	3,840	4,870	18
CHAFFEE "	1,023	18,490	18,350	20,465	19,400	19,850	17,500	19,500	19,180	18
FREMONT "	1,557	25,445	24,545	21,434	21,500	19,500	17,300	24,400	22,090	14
PUEBLO "	2,435	105,830	98,436	101,234	112,200	110,505	101,500	108,300	105,600	43
CROWLEY "	808	54,675	50,030	57,946	75,500	55,700	45,300	54,700	56,620	70
OTERO "	1,259	82,970	77,845	71,023	75,400	80,600	78,000	85,000	78,690	63
BENT "	1,524	97,020	89,585	78,250	80,100	77,780	75,000	97,500	84,730	56
PROWERS "	1,630	170,660	168,755	111,364	146,500	138,000	147,000	171,000	153,330	94
5 COUNTY - PUEBLO, CROWLEY, OTERO, BENT AND PROWERS - TOTALS	7,654	510,955	485,650	419,817	489,700	482,500	445,300	519,000	478,970	62

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PLATE 33

ACRES OF FIELD CROPS HARVESTED

AVERAGE SEASON OF SEVEN YEAR PERIOD 1924-30

Arranged and Averaged by C. L. PATTERSON, Cons. C.E.

SUB-DIVISION	DATA FOR THE KANSAS AREAS			DATA FOR THE COLORADO AREAS		
	AREA SQ. MI.	FIELD CROPS HARVESTED ACRES	ACRES OF CROPS PER SQ. MI OF AREA	AREA SQ. MI.	FIELD CROPS HARVESTED ACRES	ACRES OF CROPS PER SQ. MI. AREA
STATE OF KANSAS	82,079	22,234,600	271			
STATE OF COLORADO				103,658	6,574,930	64
37 COUNTIES EAST. KANSAS	22,756	5,457,700	240			
32 COUNTIES CENT. "	31,669	10,701,300	338			
31 COUNTIES WEST. "	27,604	6,075,600	220			
16 COUNTIES S.E. COLORADO				28,529	1,554,405	54
32 COUNTIES ARK. RIVER BASIN CENT. & WEST. KANS.	27,752	7,948,400	286			
13 COUNTIES ON ARK. RIVER IN CENT. & WEST. KANSAS	12,700	3,833,600	302			
8 COUNTIES ON ARK. RIVER IN SOUTH EAST COLORADO				10,665	526,110	49
5 COUNTIES ON ARK. RIVER IN WESTERN KANSAS	5,117	970,900	190			
5 COUNTIES ON ARK. RIVER IN SOUTH EAST COLORADO				7,654	478,970	62

PLATE 34

PLATE 24

VALUES OF THE FIELD CROPS HARVESTED DURING THE SEASONS OF 1924-1930. IN THE STATE OF COLORADO AND THE COUNTIES OF THE ARKANSAS RIVER BASIN

DATA REPORTED BY COLORADO CO-OPERATIVE CROP REPORTING SERVICE. UNITED STATES DEPT OF AGRICULTURE - BUREAU OF AGRICULTURAL ECONOMICS.

Arranged and Averaged by C. L. PATTERSON, Colo. Civil Eng.

	AREA	VALUES OF THE FIELD CROPS HARVESTED DURING THE YEARS SHOWN BELOW							AVERAGE
	SQUARE MILES	1924 Dollars	1925 Dollars	1926 Dollars	1927 Dollars	1928 Dollars	1929 Dollars	1930 Dollars	AVERGE OF 7-YR. PERIOD	Dollars PER SQ. MI.
WHOLE STATE OF COLORADO	103,658	132,015,097	137,630,000	120,969,000	132,316,000	116,758,000	134,537,170	124,842,520	129,381,000	$ 1,238
16 COUNTIES OF S.E. COLO.	28,539	27,769,735	28,552,771	28,552,771	24,933,070	25,385,840	28,611,810	27,408,930	35,152,400	882
8 COUNTIES OF S.E. COLO. IN ARK. RIVER BASIN NOT ON CHANNEL OF ARK. RIVER	17,874	10,999,330	10,395,331	7,105,634	10,319,930	9,495,190	11,535,230	11,642,250	10,235,700	575
EL PASO COUNTY	2,121	2,113,465	2,445,867	1,506,728	2,498,850	1,874,650	1,834,960	2,394,870	2,095,500	999
LINCOLN "	2,570	2,841,840	2,543,600	1,925,342	2,757,210	2,632,800	1,999,310	2,189,250	2,412,800	940
CHEYENNE "	1,717	1,333,935	1,231,802	563,494	815,470	1,031,090	1,015,470	1,435,520	1,018,100	607
KIOWA "	1,798	849,674	817,344	429,218	715,520	845,930	926,070	1,129,120	816,400	455
CUSTER "	747	535,525	569,768	351,830	482,180	435,010	596,530	727,760	521,100	700
HUERFANO "	1,500	503,625	588,584	546,819	591,230	473,300	637,080	419,120	541,000	360
LAS ANIMAS "	4,809	1,105,748	1,072,836	841,402	839,210	779,060	1,542,310	1,075,540	1,039,400	216
BACA "	2,552	1,716,420	1,126,211	892,761	1,543,280	1,536,350	2,283,500	2,221,870	1,761,400	689
8 COUNTIES ON ARK. RIVER IN SOUTH EAST COLORADO	10,665	16,770,425	15,157,440	13,449,024	14,633,140	13,863,750	16,776,580	15,766,680	14,916,700	1,400
LAKE COUNTY.	571	88,217	101,021	45,070	25,200	70,470	48,740	58,240	62,400	173
CHAFFEE "	1,083	522,101	541,926	564,005	612,400	541,710	441,330	390,350	520,100	480
FREMONT "	1,557	1,283,541	1,091,442	936,816	1,074,740	948,870	944,370	921,800	1,027,100	660
PUEBLO "	2,433	2,536,314	2,525,500	2,009,967	2,736,340	2,493,540	2,890,340	3,055,630	2,653,300	1,090
CROWLEY "	808	2,149,361	1,555,857	2,110,405	2,070,010	2,039,120	2,178,670	2,322,300	2,060,900	2,550
OTERO "	1,259	4,380,057	3,497,540	3,349,198	3,365,060	3,460,310	4,267,990	4,029,520	3,862,100	3,070
BENT "	1,524	2,210,611	1,347,859	1,336,241	1,940,370	1,872,540	2,435,760	2,313,600	1,929,600	1,266
PROWERS "	1,630	3,514,545	2,755,165	2,571,294	2,609,020	1,942,190	3,492,980	2,674,640	2,800,000	1,720
PUEBLO, CROWLEY, OTERO BENT AND PROWERS CO. 5 COUNTY TOTALS	7,654	14,871,554	11,460,051	11,383,133	12,920,800	12,302,700	15,315,590	14,395,790	13,307,100	1,740

PLATE 35

AVERAGE VALUES OF FIELD CROPS HARVESTED

DURING THE SEVEN YEAR PERIOD 1924-30

Arranged and Averaged by C.L. PATTERSON, Cons. C.E.

	DATA FOR THE KANSAS AREAS			DATA FOR THE COLORADO AREAS		
	AREA SQ. MI	VALUE OF FIELD CROPS AVGE. 1924-30 DOLLARS	VALUE OF CROPS PER SQ. MI. OF AREA	AREA SQ. MI.	VALUE OF FIELD CROPS AVGE 1924-30 DOLLARS	VALUE OF CROPS PER SQ. MI. OF AREA
STATE OF KANSAS	83,029	$ 314,775,000	$ 3,813			
STATE OF COLORADO				103,658	$ 128,381,000	$ 1,238
37 COUNTIES-EAST. KANS.	22,756	92,503,000	4,065			
37 Co. " CENT. "	31,664	152,170,000	4,805			
31 " WEST. "	27,604	70,102,000	2,540			
16 COUNTIES S.E. COLO.				29,539	25,171,000	882
32 COUNTIES ARK. RIVER BASIN CENT. & WEST. KANS	27,752	112,590,000	4,050			
13 COUNTIES ON ARK RIVER IN CENT. & WEST. KANS.	12,700	56,921,000	4,482			
8 COUNTIES ON ARK. RIVER IN SOUTH EAST. COLORADO				10,665	14,915,000	1,400
5 COUNTIES ON ARK. RIVER IN WESTERN KANSAS	3,117	14,126,000	2,760			
5 COUNTIES ON ARK. RIVER IN SOUTH EAST COLORADO				7,654	13,307,100	1,740

PLATE 34

ASSESSED VALUATIONS OF THE COUNTIES OF SOUTH EASTERN COLORADO

FOR THE YEARS 1921 TO 1930

AS REPORTED BY THE STATE TAX COMMISSION

COMPILED BY C. L. PATTERSON, Cons. Civil Eng.

DATA SHOWN TO NEAREST THOUSAND DOLLARS AND THREE ZEROS OMITTED

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	TEN YEAR AVERAGE
STATE OF COLORADO	1,573,256	1,548,618	1,543,590	1,538,097	1,540,732	1,546,830	1,565,291	1,577,560	1,586,925	1,586,465	1,561,256
16 COUNTIES OF ARK RIVER BASIN IN S.E. COLORADO	401,490	396,539	394,144	391,265	389,915	387,406	392,451	394,686	397,079	396,431	394,144
8 COUNTIES ON TRIBUTARIES OF THE ARKANSAS RIVER	203,619	202,047	200,342	198,157	196,702	193,362	197,205	196,936	197,446	196,001	198,242
EL PASO COUNTY	69,400	69,479	70,057	70,661	70,999	70,612	72,057	73,307	73,323	73,327	71,747
LINCOLN "	24,584	23,431	23,518	23,145	22,624	21,765	20,952	20,503	20,406	18,385	21,515
CHEYENNE "	20,513	20,647	19,574	18,303	16,938	16,787	15,719	15,570	13,784	13,354	17,199
KIOWA "	15,423	15,080	14,402	14,161	14,354	13,669	13,585	13,481	13,187	13,005	14,015
CUSTER "	3,119	3,093	3,112	3,097	3,114	3,081	3,093	3,204	3,096	3,075	3,104
HUERFANO "	16,068	15,775	15,904	16,141	15,960	16,030	17,372	17,163	16,606	16,068	16,369
LAS ANIMAS "	43,748	43,669	43,448	42,940	42,308	41,892	42,072	40,834	41,622	41,974	42,450
BACA "	10,964	10,673	10,465	9,311	10,005	10,048	12,572	12,334	13,390	14,219	11,503
8 COUNTIES ON MAIN CHANNEL OF ARKANSAS RIVER	197,871	194,492	193,802	193,128	193,611	193,544	195,232	197,660	199,633	200,430	195,902
LAKE COUNTY	8,932	8,251	8,087	7,744	7,707	7,680	7,879	8,055	7,610	7,487	7,942
CHAFFEE "	10,394	10,148	10,567	10,590	10,490	10,557	9,316	9,439	9,611	9,359	10,212
FREMONT "	21,693	21,177	21,578	21,471	21,497	21,423	21,770	23,589	23,383	22,872	22,045
PUEBLO "	71,145	71,849	72,717	73,446	74,264	75,663	77,714	79,997	81,298	83,025	76,108
CROWLEY "	11,957	11,671	9,545	9,809	9,799	9,699	9,925	10,002	10,185	9,744	10,234
OTERO "	34,123	33,200	33,703	33,694	34,446	33,631	33,388	31,827	32,014	32,119	33,210
BENT "	15,023	14,331	13,946	13,512	13,588	13,446	13,712	13,430	13,742	13,760	13,814
PROWERS "	24,106	23,239	23,156	22,862	21,770	21,545	21,530	21,173	21,832	21,564	22,277
4 COUNTIES ON LOWER ARK RIVER IN S.E. COLORADO, CROWLEY, OTERO, BENT, AND PROWERS COUNTIES	85,209	82,481	80,365	79,677	79,465	79,221	78,568	76,632	77,775	77,187	79,985

PLATE 37

COMPARATIVE DATA AS TO TOTAL ASSESSED VALUATIONS IN KANSAS AND COLORADO, AND PORTIONS OF EACH STATE

AVERAGE VALUATIONS PERIOD 1921-1930

DATA REPORTED BY THE STATE TAX COMMISSIONS

COMPILED BY C. L. PATTERSON, CONS. C. E.

	DATA FOR THE KANSAS AREAS			DATA FOR THE COLORADO AREAS		
	AREA SQ. MI.	ASSESSED VALUATIONS PERIOD AVERAGE-DOLLARS	ASSESSED VALUATION PER SQ. MI. OF AREA	AREA SQ. MI.	ASSESSED VALUATIONS PERIOD AVERAGE-DOLLARS	ASSESSED VALUATION PER SQ. MI. OF AREA
STATE OF KANSAS	82,029	$ 3,663,206,000	$ 44,657			
STATE OF COLORADO				103,658	$ 1,561,236,000	$ 15,061
37 COUNTIES EAST. KANS.	32,756	$ 1,639,678,000	72,035			
37 COUNTIES CENT. KANS.	31,669	$ 1,649,670,000	$ 52,090			
31 COUNTIES WEST. KANS.	27,604	$ 373,858,000	$ 13,545			
16 COUNTIES S.E. COLO.				28,539	$ 394,144,000	$ 13,807
15 COUNTIES ON ARK. RIVER IN CENT. AND WEST. KANS.	12,760	$ 658,450,000	$ 51,451			
8 COUNTIES ON ARK. RIVER IN SOUTH EAST. COLORADO				10,665	$ 195,902,000	$ 18,369
HAMILTON, KEARNEY, FINNEY, GRAY AND FORD COUNTIES ON ARK. RIVER IN WEST. KANS.	5,117	$ 80,858,000	$ 15,703			
CROWLEY, OTERO, BENT, AND PROWERS COUNTIES ON ARK. RIVER IN S.E. COLO.				5,221	$ 79,595,000	$ 15,245

Colo. Ex. 20

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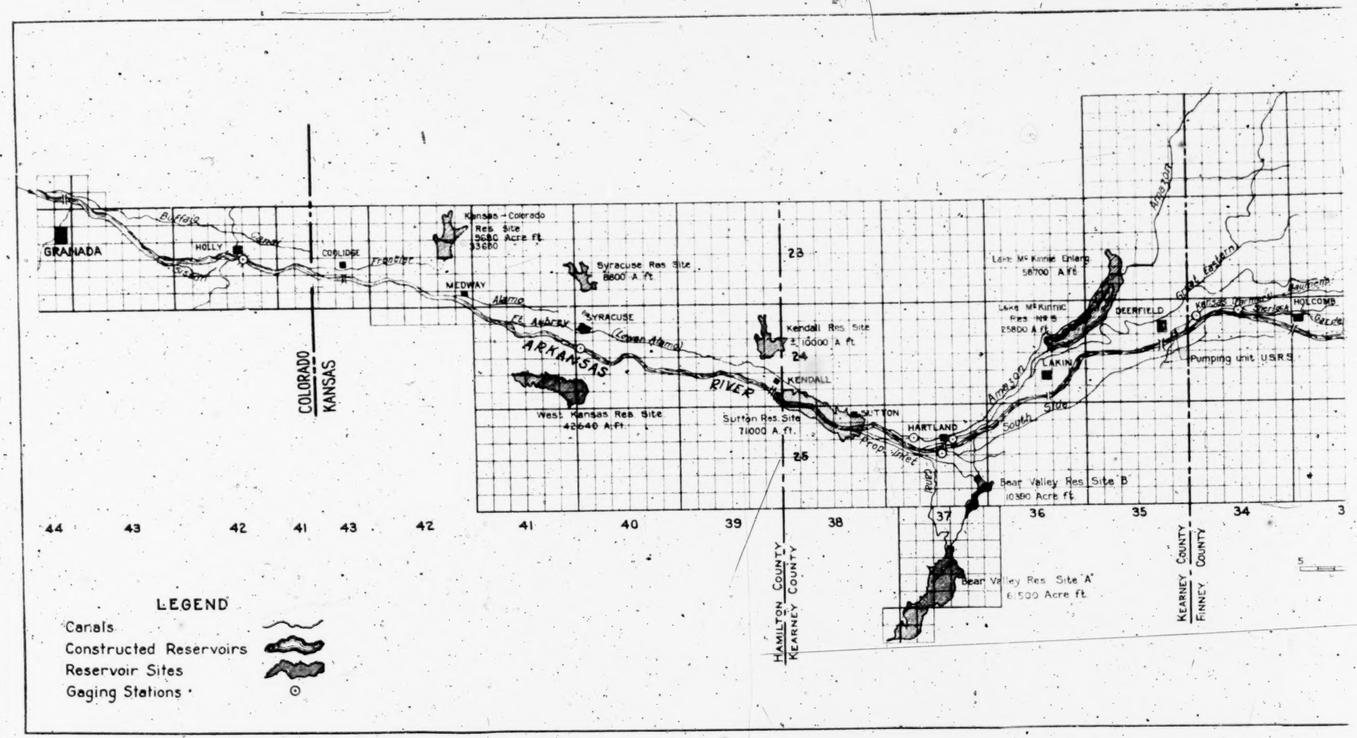
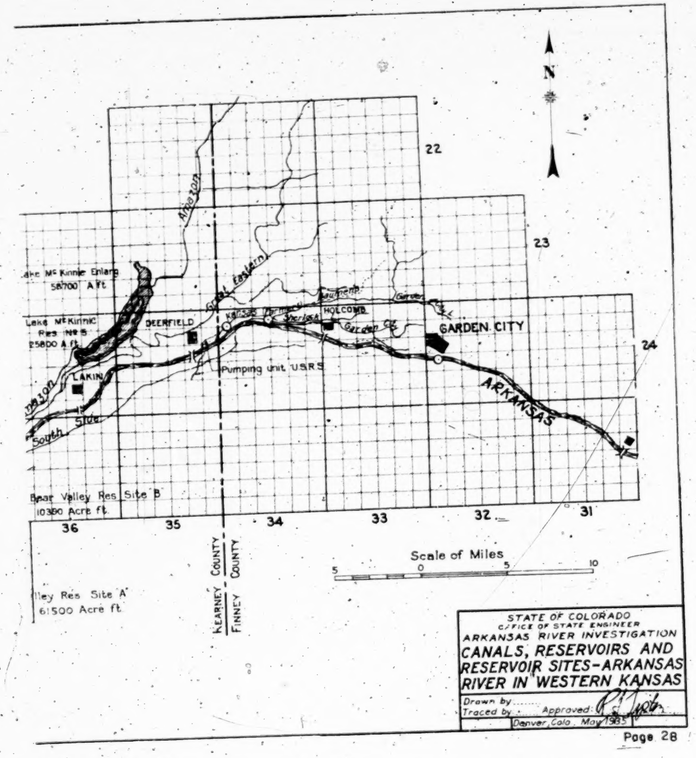
TABLE 8.—*Monthly and seasonal net irrigation requirements of the various subdivisions of the Missouri and Arkansas River Basins*

Number of division	Description of division	Monthly percentage of total seasonal net irrigation requirements							Seasonal net irrigation requirement, in acre-feet per acre
		Apr.	May	June	July	Aug.	Sept.	Oct.	
1	Northeastern Montana	.....	6	37	36	20	.....	[1] 1	1.40
2	North central Montana	.....	6	41	31	21	.....	[1] 1	1.50
3	Central Montana	.....	3	32	44	20	.....	[1] 1	1.70
4	Upper Missouri River Basin in Montana	.....	3	34	47	15	.....	[1] 1	1.60
5	Upper Yellowstone River Basin in Montana	.....	4	33	45	17	.....	[1] 1	1.90
6	Southeastern Montana	.....	5	31	39	20	4	[1] 1	1.95
7	Big Horn River Basin in Wyoming	.....	4	33	43	16	3	[1] 1	1.65
8	Yellowstone and Missouri River Basin in Wyoming	.....	6	32	41	18	2	[1] 1	1.70
9	Upper Platte River Basin in Wyoming	.....	3	35	44	15	2	[1] 1	1.60
10	Northeastern Colorado	1	14	27	28	19	7	[1] 1	2.05
11	North central Colorado	2	11	29	30	20	7	[1] 1	2.20
12	South central Colorado	6	15	28	29	18	3	[1] 1	2.10
13	Southeastern Colorado	8	20	23	24	19	4	[2] 2	2.30
14	Western Kansas	4	14	25	26	20	7	[2] 4	1.75
15	Central Nebraska	3	10	24	32	20	8	[2] 3	1.25
16	Western Nebraska	2	8	23	28	25	12	[2] 2	2.00
17	Western South Dakota	1	4	27	34	23	10	[1] 1	1.50
18	Western North Dakota	.....	3	35	38	22	1	[1] 1	1.35

[1] Winter irrigation. [2] Mainly winter irrigation.

One of the principal influences affecting the seasonal irrigation requirements of this area is the shortness of the period in which water is applied to crops. In general, the use of water on alfalfa covers the longest period, but even this is short when compared with its duration on other main river basins of the West. In irrigating 275 plots of alfalfa located in several localities of southern Alberta over a number of years, 15 per cent of the total seasonal application was made in May, 29 per cent in June, 33 per cent in July, 22 per cent in August, and only 1 per cent in September. In irrigating small grain the season is shorter. In a total of 758 plots of wheat, oats, and barley grown in southern Alberta 2 per cent of the water application was made in May, 44 per cent in June, 46 per cent in July, 8 per cent in August, and none in September. In irrigating 62 fields of alfalfa in the Yellowstone Valley, Mont., 11 per cent of the total application was made in May, 25 per cent in June, 35 per cent in July, 26 per cent in August, and 3 per cent in September. In irrigating 48 fields of wheat and oats in the same valley, 49 per cent of the application was made in June, 50 per cent in July, and 1 per cent in August. In the Arkansas Valley of Colorado the growing season is longer, water occasionally being applied in March and as late as October, with correspondingly smaller quantities in June and July. In a total of 132 field experiments on diversified crops in the Arkansas Valley, 2 per cent of the water application was made near the end of March, 8 per cent in April, 20 per cent in May, 23 per cent in June, 22 per cent in July, 19 per cent in August, 4 per cent in September, and 2 per cent in October.





STATE OF COLORADO
OFFICE OF STATE ENGINEER
ARKANSAS RIVER INVESTIGATION

CANALS, RESERVOIRS AND RESERVOIR SITES-ARKANSAS RIVER IN WESTERN KANSAS

Drawn by
Traced by
Approved
Denver, Colo. May 1933

TABULATION SHOWING FLOW OF ARKANSAS RIVER AT PUEBLO, COLO., AND HOLLY, COLO., AND NATURAL CONTRIBUTIONS OF TRIBUTARIES, ALSO QUANTITIES CONSUMED AND UNCONSUMED

Data Extracted From Co-operative Investigation (Amsley) Reports (1922-1925) and Compiled by C. L. Patterson, Engineer.

	THE YEAR 1922 (Acre-feet)		THE YEAR 1923 (Acre-feet)		THE YEAR 1924 (Acre-feet)		THE YEAR 1925 (Acre-feet)	
1 ARKANSAS RIVER AT PUEBLO		469700		731300		568000		323630
2 PUEBLO-SEWER	17809		23210		20340		17290	
3 C.F.&I. - SALT CREEK	19902		24810		24968		23628	
4 BESSEMER DIVERSIONS	65740		67396		74200		59402	
5 SUM OF BY-PASSED AMOUNTS		103451		113418		119508		120320
6 ARK. RIVER AT HEAD-OF AREA		573151		846716		687508		423950
NATURAL FLOW TRIBUTARIES								
FOUNTAIN RIVER	18690		87625		44358		15921	
SALT CR. (Item 3)	19902		24810		24968		23628	
PUEBLO SEWER (Item 2)	17809		23210		28340		17290	
ST. CHARLES RIVER	4800		54565		27960		16537	
HUERFANO RIVER	5179		43752		20568		10269	
Chicosa Creek	130		(a)		(a)		215	
APISHAPA RIVER	5910		51290		7509		15660	
TIMPAS CREEK	7576		47000		9319		19328	
Crooked Arroya	1295		4055		710		5794	
Anderson Arroya	290		2000		262		830	
King Arroya	625		(a)		(a)		(a)	
Misc. Pueblo-La Junta (a)	2400(E)		14000(E)		1000(E)		18137(E)	
HORSE CREEK	19725		(b)		31004		9066	
ADOBE CREEK	4130		(b)		2000(E)		12256	
PURGATOIRE RIVER	22360		387310		52809		87166	
Ruie Creek	2111		3268		906		13710	
Caddoa Creek	1011		2993		231		17892	
Mud Creek	1049		5014		206		29882	
Clay Creek	1417		6000		595		9029	
BIG SANDY	10520		(b)		10758		7339	
Buffalo Creek	1410		3440		1810		2046	
Two Buttes Creek	0		10023		0		17260	
Wild Horse Creek	0		11209		3989		3387	
Misc. La Junta-Holly (b)	0		51000(E)		2000(E)		21000(E)	
7 SUM TRIBUTARY ITEMS	148174		832566		234558		373572	
Less By-Passed Items 2 & 3	37711		48020		45308		40918	
8 TRIBUTARY CONTRIBUTIONS		110463		784546		189250		332654
9 TOTAL ORIGINAL SUPPLY		683614		1631362		876758		756604
ARK. RIVER AT HOLLY	93687		800780		268718		231368	
Wild Horse Creek	7313		15489		6693		8307	
Holly Drain (Inc. Cheyenne Cr)	-		7914		23843		22610	
10 UNCONSUMED OUTFLOW		101000		824183		299254		262285
11 CONSUMED RIVER FLOW		582614		807179		577504		494319
IN STORAGE JAN. 1	93638		34000		291514		96860	
do DEC. 31	34000		291514		96860		63575	
12 CONSUMED RES. WATER		59638		-257514		194654		33294
13 TOTAL WATER CONSUMED		642252		549665		772158		527613
14 ACREAGE IRRIGATED (Acres)		310000		325000		321424		329572

IN THE SUPREME COURT OF THE UNITED STATES

Original Case.

THE STATE OF COLORADO,

Complainant,

vs.

THE STATE OF KANSAS, and THE FINNEY COUNTY WATER USERS' ASSOCIATION, a Corporation,

Defendants.

STIPULATION

THIS STIPULATION made and entered into this 18th day of December, 1933, by and between the State of Colorado, complainant herein, for and on its own behalf and on behalf of its citizens, its administrative officials and all ditch companies in the Arkansas River Basin, which are now or which may hereafter be diverting water from the flow of the Arkansas River, herein designated as first parties and complainant, and the State of Kansas on its own behalf and the Finney County Water Users Association, defendants herein, the State of Kansas acting on behalf of its citizens, its administrative officials and ditch companies, which are now or which may be hereafter diverting water from the flow of the Arkansas River.

WITNESSETH, That Whereas the above entitled case, now pending in the Supreme Court of the United States, includes a controversy between the State of Kansas and the State of

Colorado as to the division and the use of the water supply of the Arkansas River, and the final submission of the case to the Court and the entry of decree therein will not be practicable to be reached for sometime in the future, and

WHEREAS there is under consideration by and on behalf of the United States of American the question whether it shall construct a dam across the main channel of the Arkansas River near the town of Caddoa, Colorado, some fifty miles West from the Kansas-Colorado line, to create a water reservoir upon and near the Arkansas River by means of said dam, which reservoir will probably have a capacity of about 680,000 acre feet of water, and

WHEREAS it is thought by the parties hereto that the construction and maintenance of such dam and reservoir, in addition to regulating the flow of water in the Arkansas River in order to guard against or lessen the damage from floods, will enable much of the water that flows in said river past the location of said proposed dam to be stored, regulated and conserved for beneficial use, and

WHEREAS the parties hereto, their officials, ditch owners and water users, recognizing the advantages which will accrue from the construction of said dam and reservoir are willing to cooperate in attempting to bring about such construction by the United States Government if assured of the protection not only to all rights which they now have and which are involved in the present controversy, but also to their existing water supply in the event said dam should be constructed and put in operation prior to a decree being entered in the Supreme Court of the United States, adjudicating

the respective rights of the parties hereto; and

WHEREAS it is desired to provide for the cooperation of the State of Kansas and the State of Colorado for the use of their influence towards obtaining the construction of such dam and the creation of such reservoir by the United States of America, and to provide, as far as the said two States may, by this Stipulation, for the allocation between the two States of the water which might be stored in such reservoir, so far as such water can be made available for beneficial use in Colorado and Kansas;

And it is also desired to secure the cooperation of the defendant herein, The Finney County Water Users' Association, for all of the purposes covered by this Stipulation;

NOW, THEREFORE, it is stipulated and agreed by and between the parties hereto as follows:

1. Each of said States and also the said The Finney County Water Users' Association, will use its influence so far as it is practicable to obtain the construction by the United States of America of said dam and reservoir, and said parties agree as between themselves to the allocation of the water that might be stored in said reservoir, as hereinafter set forth; it being understood that such allocation shall be subject to the storage and discharge of water stored in such reservoir by the United States of America in order to lessen or avoid damages from floods.

2. That the construction and operation of said dam and reservoir shall not disturb the status quo of the diversion of water for beneficial uses from said Arkansas River by the

ditches and canals now constructed and operated in both of the States of Colorado and Kansas. IT IS UNDERSTOOD AND AGREED that in order to maintain the status quo of said diversion as hereinabove referred to there shall be allocated to the State of Kansas for delivery at the State line in the Arkansas River from Colorado into Kansas a quantity of water up to 77,000 acre feet annually, of which amount 52,000 acre feet thereof shall be delivered to the State line during the irrigation season from April 1 to October 1 of each year as and when required by the Kansas State water officials, and 25,000 acre feet thereof to be delivered during the non-irrigating season from October 1 to April 1 at such times and in such amounts as same could be diverted and used for irrigation or storage; and for irrigation of lands in Colorado below said reservoir a quantity of water up to 160,000 acre feet annually.

3. If the flow of water in the Arkansas River into the reservoir, and into the Arkansas River below the reservoir from other sources than the reservoir shall be insufficient to supply the total amount allocated as provided in paragraph 2 hereof; then in that event the said waters shall be pro rated between Colorado and Kansas in the relation hereinabove in paragraph 2 hereof set forth.

4. After the allocation of water as provided in the next preceding paragraphs, all additional water which may be impounded in said reservoir, excepting, always the amounts of water discharged for flood control purposes, hereinafter referred to, shall constitute surplus and shall be allocated one-half to Colorado and one-half to Kansas, said surplus to be determined April 1, annually, or such other date as may be mutually agreed upon by water officials of the two States, and the amount allocated to each State shall be discharged from said reservoir from time

to time on request of the Water Officials of each State respectively for the water allocated to it, but the release of such water on demand shall not be considered as constituting any part of the amounts specified in paragraph 2 herein.

5. All exchanges of water between the Colorado ditches whose headgates are below said reservoir and those whose headgates are above said reservoir shall be confined and limited to, and supplied from Colorado's portion of the surplus waters stored in said reservoir, as provided for in paragraph 4 hereof, and all such exchanges shall be charged against Colorado's share of the surplus in ascertaining the 50-50 division between the two states.

6. Any water releases from said reservoir for flood control or because of lack of reservoir capacity shall not be charged to either State unless such releases are coincident with the request for water on behalf of said State or the use and diversion by the ditches in such State, and then only to the extent of the request or use so made by it, in which event it shall be charged against the State so requesting or using the amount so requested or diverted.

7. The provisions in this Stipulation for allocation of flow of water shall become effective when such dam shall have been constructed and water begun to be stored in said reservoir.

8. This Stipulation is without prejudice to the claims of either party hereto in the above entitled case, and shall be subject to the decision of the Supreme Court of the United States as to the respective rights of the parties hereto

to water flowing in the Arkansas River, or stored in said reservoir.

9. That joint control, regulation and administration of the storage and discharge of all waters in said dam and reservoir shall be had by and between Kansas and Colorado.

10. This Stipulation shall not be filed in this action until the construction of said dam and reservoir by the United States Government shall be assured.

Paul P. Prosser
Attorney General of Colorado

A. W. McHendrie

Henry L. Kidd
Solicitors for Complainant

Attorney General of Kansas

John G. Egan
Chester I. Long W. E. Stanley

Solicitors for Defendants

Approved:

Governor, State of Colorado

State Engineer of Colorado

Approved:

Governor of Kansas

Chief Division of Water Resources,
State of Kansas

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DIVERSION DATA

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official reports of Division Engineer, Irrigation Division No. 2

MONTHLY AND ANNUAL DIVERSIONS IN ACRE FEET
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CALCULATED AVERAGE MONTHLY AND ANNUAL DIVERSIONS IN ACRE FEET
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Reports of Kansas Irrigation Commissioner, 1921-1926;
Kansas State Board of Agric., Division of Water Resources, 1924-1930

MONTHLY AND ANNUAL DIVERSIONS IN ACRE FEET
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from
U.S.G.S. Water Supply Papers and Reports of Kansas State Board of Agric.,
Division of Water Resources

CALCULATED AVERAGE MONTHLY AND ANNUAL DIVERSIONS IN ACRE FEET
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MONTHLY AND ANNUAL TRANSMOUNTAIN DIVERSIONS IN ACRE FEET FROM COLORADO AND GUNNISON RIVER BASINS INTO ARKANSAS RIVER BASIN FOR YEARS 1931-1940 INCLUSIVE

from

Official records of Colorado State Engineer

CALCULATED AVERAGE MONTHLY AND ANNUAL TRANSMOUNTAIN DIVERSIONS IN ACRE FEET FROM COLORADO AND GUNNISON RIVER BASINS INTO ARKANSAS RIVER BASIN FOR THE PERIOD OF YEARS FOLLOWING 1930

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COLORADO WATER CONSERVATION BOARD - Engineering Department

MONTHLY AND ANNUAL DIVERSIONS IN ACRE FEET
FROM MAIN ARKANSAS RIVER IN COLORADO
SEGREGATIONS BY STREAM SECTIONS

r of Data — State of Colorado - Official Reports, Division Engineer, Division No. 2.
Handwritten figures are calculated values.

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	PERCENT OF 1930 AVGE.
						PARKDALE TO LA JUNTA SECTION								
30	39,255	40,698	45,969	54,899	101,529	147,417	125,087	110,012	64,852	55,444	52,145	44,449	881,750	100
	39,804	41,110	52,806	52,213	98,569	88,381	56,114	41,979	33,311	39,600	35,994	34,900	614,783	70
	33,578	31,872	35,095	38,580	68,097	118,391	109,564	76,307	46,716	41,816	44,512	28,125	672,453	76
	28,924	22,745	33,882	35,017	89,060	161,110	91,718	91,792	57,374	40,163	43,699	49,062	744,516	84
	46,008	40,202	41,396	40,732	67,780	50,593	40,665	39,275	36,618	31,663	33,098	32,840	499,535	57
	32,735	31,360	32,664	28,260	85,050	172,861	130,166	92,231	60,584	49,470	44,525	39,602	799,306	91
	41,045	31,704	38,243	47,349	152,119	149,140	120,741	138,091	57,117	54,989	49,822	49,663	930,519	106
	25,987	40,708	41,864	59,047	96,200	105,695	76,224	64,690	39,928	42,282	35,963	38,301	684,269	79
	35,358	34,335	39,064	44,114	87,437	208,531	125,306	93,923	111,480	56,544	55,110	48,127	959,199	107
	42,490	37,942	55,001	60,846	102,105	96,488	70,278	64,464	32,953	31,992	35,771	31,059	660,992	75
	32,797	35,289	38,314	32,987	62,052	74,085	60,010	46,273	45,491	40,283	34,367	31,775	523,629	59
	35,438	37,217	36,772	47,385	181,335	221,347	152,282	126,240	66,801	88,260	64,401	46,176	1,105,654	125
Avg	34915	34953	40446	43894	99100	131496	93879	79569	56210	46969	43380	39057	763878	84
						LA JUNTA TO CADDOA SECTION								
30	288	437	1,602	2,814	4,294	5,455	5,264	4,302	3,599	3,175	2,110	952	34,520	100
	0	799	2,106	4,100	4,870	4,830	3,990	1,998	1,787	1,651	1,682	0	27,813	80
	0	1,447	1,815	2,825	3,910	6,240	6,250	5,130	2,430	3,566	3,568	476	36,617	107
	99	627	2,060	1,973	4,140	8,060	4,770	5,150	3,696	2,561	2,884	1,960	37,980	111
	960	2,310	2,730	2,650	4,280	2,670	1,725	2,207	2,019	1,117	968	1,790	25,586	75
	1,260	827	1,998	1,137	3,363	4,840	5,400	4,130	3,218	2,196	2,741	962	32,387	94
	10	63	1,178	2,220	4,960	4,470	4,930	4,730	3,710	2,860	2,850	1,759	33,720	98
	708	1,750	2,436	3,030	4,690	5,580	5,930	3,410	3,580	4,200	1,387	0	36,551	106
	120	0	1,140	3,520	5,540	5,250	3,320	2,940	1,550	1,220	980	830	26,210	76
	0	100	1,970	1,602	3,230	3,870	2,770	1,945	2,998	1,420	1,620	690	22,207	65
	10	690	2,260	2,470	4,790	5,810	4,900	4,820	2,510	1,830	2,540	1,110	33,740	98
Avg	300	836	2060	2604	4513	4889	4359	3634	2818	2217	2111	948	31289	91
						CADDOA TO STATELINE SECTION								
30	1,338	2,941	7,568	12,588	18,946	28,390	28,520	18,782	12,998	11,164	11,722	3,975	161,731	100
	0	2,892	6,516	10,350	28,319	22,001	6,957	5,289	4,903	5,651	5,414	3,978	102,299	63
	7,165	5,268	7,281	6,691	14,013	29,604	25,635	24,010	6,662	7,018	9,366	3,165	139,893	86
	2,967	2,607	5,821	7,205	27,541	40,065	30,790	25,863	17,003	8,665	8,668	12,902	189,677	117
	8,904	8,027	9,279	7,146	16,539	8,501	8,506	3,689	11,930	4,833	3,798	4,478	95,500	59
	4,466	4,064	4,535	3,881	22,347	41,118	33,378	18,283	19,433	11,357	13,169	7,325	183,522	113
	3,678	1,162	3,694	4,510	31,753	16,412	22,984	36,262	15,009	25,370	15,091	9,025	182,730	113
	3,739	4,374	7,519	9,682	20,505	33,773	15,834	6,087	23,062	5,208	5,769	8,899	144,461	89
	8,898	8,362	9,663	7,115	27,320	31,954	31,967	15,884	27,890	17,080	13,461	10,664	206,098	127
	11,671	7,930	12,149	10,921	27,326	23,515	7,783	12,807	2,293	3,245	3,544	3,168	126,332	78
	2,459	5,393	8,345	7,116	13,066	16,451	3,406	7,499	11,509	6,310	6,373	9,223	100,150	62
	9,891	7,370	10,274	13,218	27,279	25,964	29,308	28,593	13,618	12,955	19,664	15,117	213,281	132
Avg	5254	5201	7378	7983	23273	26305	19686	16708	14210	9608	9663	7993	153063	95

COLORADO WATER CONSERVATION BOARD - Engineering Department

MONTHLY AND ANNUAL DIVERSIONS IN ACRE-FEET
FROM ARKANSAS RIVER IN KANSAS

Source of Data: U.S.G.S. Water Supply Papers and Reports of Kansas State Board of Agriculture, Division of Water Resources, 1931-39 incl.
Handwritten figures are calculated values.

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	PERCENT OF 1930 AVGE.
STATELINE TO GARDEN CITY SECTION*														
Avge. to 1930(a)	(5 full years of record plus 11 partial years) 6183	7994	7369	4607	6485	6760	7945	13824	6710	4476	6189	3074	81616	100
1931			13823	7089	6922	5431	394	157	0	149	14	2640		
1932	4028	6104	5030	1842	1406	15630	2565	2696	0	14	573	690	40578	50
1933	4385	5666	2253	930	13237	7686	5516	22241	23082	0	2764	5666	93426	114
1934	6465	6126	6003	1846	1961	2485	2577	26	6251	0	14	537	34291	42
1935	1638	1150	758	0	12373	22065	22938	7176	11184	2833	1450	4022	87587	107
1936	4920	5963	5092	466	18573	15328	5082	26194	3438	2991	4156	6611	98814	121
1937	1180	2024	4839	1964	506	23545	1180	132	18056	143	63	938	54570	67
1938	4174	3366	2669	4712	13008	30340	23982	5902	34770	4747	5680	6672	140022	172
1939	11411	6018	10546	8046	4497	967	2	0	0					
3/39 Avge.	4775	4127	5667	2988	8054	13419	7138	7169	10753	1358	1839	3473	70960 (b)	87

* Does not include three small ditches in vicinity of Syracuse.

(a) Monthly averages calculated from combination of some complete and some fractional records published in: -
Water Bailiff's Reports - 1915 to 1925
Surface Waters of Kansas - 1921 to 1924
Reports of Irrigation Commissioner - 1921 to 1926
Reports of Division of Water Resources, Kansas State Board of Agriculture - 1924 to 1930

(b) Sum of monthly averages.

Colo. Ex. 124 (Sheet 1 of

COLORADO WATER CONSERVATION BOARD - Engineering Department

MONTHLY AND ANNUAL TRANSMOUNTAIN DIVERSIONS IN ACRE FEET
FROM COLORADO AND GUNNISON RIVER BASINS INTO ARKANSAS RIVER BASIN

Source of Data: Official Records of Colorado State Engineer, 1931-1940 inclusive.
Handwritten figures are calculated values.

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL
BUSK-IVANHOE TUNNEL - From Colorado River Basin to Arkansas River Basin.													
Avge. to 1930	(6-Year Record for years prior to 1931. Average calculated from values in Xan. Exhibit 21) 0	0	58	213	675	2249	678	368	197	252	42	0	4726
1931					344	1952	345	94	87	101			2923
1932				146	1153	2956	1373	311	115	52			6109
1933				432	716	3076	708	114	140	10			5196
1934				266	2183	864	79	44	19	28			3503
1935				285	416	2162	1390	290	203	166			5212
1936				634	2066	2885	824	405	181	213	38		7246
1937				370	1718	2161	573	165	168	8	106		5269
1938				259	695	2570	1608	202	130	63	30		5557
1939				597	1626	2504	384	87	0	85	27		5510
1940				9	1008	2395	391	93	53				3907
3-Ave Avge	0	0	0	331	1192	2378	768	181	178	73	20	0	5053
BOONE DITCH - From Colorado River Basin to Arkansas River Basin.													
Avge. to 1930	(14-Year Record for years prior to 1931. Average calculated from values in Xan. Exhibit 21) 54	50	55	62	345	594	220	118	78	76	66	58	1776
1931					63	116	80	42	28	31			390
1932					168	398	132	99	28	33			818
1933						322	121	44	31	28	7		553
1934					131	120	23						274
1935							127	33	16	10			186
1936					349	187							536
1937						176	122	52	26	6			382
1938					270	818	213	66	35	10			1412
1939					531	325	53	13					922
1940					80	78	14						172
3-Ave Avge	0	0	0	0	159	257	89	31	26	12	4	0	565
FREMONT PASS DITCH - From Colorado River Basin to Arkansas River Basin.													
Avge. to 1930	(2-Year Record for years prior to 1931. Average calculated from values in Xan. Exhibit 21) 0	0	0	0	8	286	396	308	168	15	0	0	1181
1931					213	497	201	108					1019
1932					163	1279	525	157	30				2154
1933					133	1224	398	40	80				1875
1934					757	579	290	133	10				1769
1935					33	956	506	121	10				1626
1936				6	183	810	320	296					1915
1937					298	545	270						1113
1938					91	934	509	51	82				1667
1939					355	686	47						1088
1940					116	379	112						634
3-Ave Avge	0	0	0	1	297	789	314	91	21	0	0	0	1512
COLUMBINE DITCH - From Colorado River Basin to Arkansas River Basin.													
Avge. to 1930	No diversions prior to 1931												
1931						219	42	15					276
1932					242	724	252	60	16				1314
1933					88	947	167	29					1231
1934					948	213	5	4	1				1171
1935					16	1003	210	26	4				1259
1936					783	747	152	95	24				1801
1937					646	501	137						1284
1938					99	1323	327	58					1797
1939					497	689	80	8					1274
1940					398	660	50						1108
3-Ave Avge	0	0	0	0	373	703	142	30	4	0	0	0	1252

COLORADO WATER CONSERVATION BOARD - Engineering Department

MONTHLY AND ANNUAL TRANSMOUNTA'N DIVERSIONS IN ACRE FEET
FROM COLORADO AND GUNNISON RIVER BASINS INTO ARKANSAS RIVER BASIN

Source of Data: Official Records of Colorado State Engineer, 1931-1941 inclusive.
Handwritten figures are calculated values.

YEAR	JAN.	FEB.	MAR.	APR.	MAY.	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL
WURTZ DITCH - From Colorado River Basin to Arkansas River Basin													
Avge. to 1930	No diversions prior to 1932												
1932					313	405							718
1933					286	1216	153	8					1669
1934				133	1025	202	23						1383
1935					264	2092	442	88	38	2			2926
1936				30	2084	1345	263	99					3761
1937					1075	576	89						1740
1938					817	1525	242	23					2607
1939					861	509	21						1471
1940					477	467	50						994
35 Ac Avge	0	0	0	13	800	935	140	34	4	0	0	0	1931
INDEPENDENCE PASS (TWIN LAKES) TUNNEL - From Colo. River Basin to Ark. River Basin													
Avge. to 1930	No diversions prior to 1935												
1935					713	11138	4148	1161	961	511	163	149	18834
1936	290	153	125	1066	5308	7845	2813	1816	0	0	0	0	19416
1937	48	141	141	213	11990	12520	5101	1340	626	236	260	194	32810
1938	155	122	130	366	5060	23700	10340	2470	2450	679	361	518	46351
1939	391	522	0	46	15100	14900	3710	559	274	290	130	29	36351
1940	32	41	51	451	6960	13510	2380	90	1080				24595
35 Ac Avge	53	63	70	357	8518	13936	4749	1206	882	286	152	148	30624
LAKESIDE (MARSHALL PASS) DITCH - From Gunnison River Basin to Ark. River Basin													
Avge. to 1930	No diversions prior to 1935												
1935						42	9						51
1936				9	218	178	36	40	4	0			485
1937					110	5							115
1938					89	160	9						258
1939					99	60	6						165
1940					12								12
35 Ac Avge	0	0	0	1	93	74	7	7	1	0	0	0	183

SUMMARY

TRANSMOUNTAIN DIVERSIONS INTO ARKANSAS RIVER BASIN

Avge. to 1930	54	50	313	275	1028	3529	1254	788	443	343	108	58	7681
1931					620	2814	668	259	115	132			11608
1932				140	2359	5762	2202	560	189	86			11707
1933				432	1223	6785	1537	235	251	38	7		10508
1934				419	5044	1978	428	181	30	20			8100
1935				265	1142	17693	6825	1719	1132	689	163	149	30746
1936	290	153	125	1745	15321	13997	4308	2751	209	213	48		39419
1937	48	141	141	583	15837	16484	6242	1357	820	250	366	194	42918
1938	155	122	130	621	7091	31030	13248	2870	2697	752	391	518	60878
1939	391	522	0	643	19069	19753	4301	667	274	375	157	29	46381
1940	32	41	51	460	11078	17469	2997	181	1133	0	0	0	33351
35 Ac Avge	92	93	45	563	7968	13375	4392	1081	685	356	112	89	28954

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STORAGE DATA

AVERAGE STORAGE ON FIRST OF MONTH IN ACRE FEET

IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

for years of record prior to 1931
from Kansas Exhibit No. 66

STORAGE ON FIRST OF MONTH IN ACRE FEET

IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

FOR YEARS 1931-1940 INCLUSIVE

from

Official Records of Colorado State Engineer

CALCULATED AVERAGE STORAGE ON FIRST OF MONTH IN ACRE FEET

IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

FOR THE PERIOD OF YEARS FOLLOWING 1930

Reservoirs Include:

Reservoir	Page
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Twin Lakes Reservoir	2
Clear Creek Reservoir	2
DeWoese-Dye Reservoir	2
City of Colorado Springs	3
Fountain Valley Res. No. 2	3
Cucharas Reservoir	3
Lake Henry	3
Lake Meredith	4
Dye Reservoir	4
Holbrook No. 1 Reservoir	4
Horse Creek Reservoir	4
Adobe Creek Reservoir	5
Great Plains Reservoirs	5
Model Reservoir	5
Two Buttes Reservoir	5

COLORADO WATER CONSERVATION BOARD - Engineering Department

STORAGE ON FIRST OF MONTH IN ACRE FEET
IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

Source of Data: Official Records of Colorado State Engineer, 1931-1940 inclusive. Handwritten figures are calculated values.

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	AVER. STOR.
SUGAR LOAF RESERVOIR													
Avge. to 1930	8406	8483	8955	8584	7193	8321	10090	9368	7995	8091	7838	8228	
1931	7810	8104	8103	8013	6067	2965	3805	2008	1508	1267	1308	1308	
1932	1688	1621	1621	1621	1868	280	5772	3339	2693	2286	2565	-	
1933	-	-	-	-	-	-	-	-	-	-	-	5586	
1934	5586	5586	5639	5638	5140	6306	6324	4311	4150	4067	4025	3996	
1935	3996	3996	3996	3996	4204	5876	11877	13272	7286	7163	7668	7696	
1936	7696	7696	7696	7476	6922	14197	13262	12947	8139	7655	7872	7909	
1937	7909	7909	7909	7909	5106	4363	7261	6120	2562	2493	2493	2599	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	5872	6219	6453	6597	6939	8139	3266	4714	1512	1512	1587	1508	
1940	1508	1692	1692	1692	1692	4046	7253	6944	3350	3075	3135	-	
5 Av.													
Avge	5239	5353	5389	5368	4691	5773	8403	6456	3842	3727	3828	4371	
TWIN LAKES RESERVOIR													
Avge. to 1930	18976	19788	20831	18019	16063	17806	22601	21103	17943	19398	16978	17308	
1931	13523	14224	13453	13403	13453	9397	9214	6519	5723	5491	5756	5308	
1932	5490	6470	6470	6470	5856	18687	16885	9920	7056	5823	5707	-	
1933	-	-	-	-	-	-	-	-	-	-	-	7391	
1934	6721	6389	6171	5690	6553	10260	7307	7056	7056	5839	5474	5374	
1935	5374	5374	5374	5374	5374	7894	38161	26572	10363	10977	13425	13435	
1936	13857	14096	14300	14121	13523	33450	43552	28381	13361	15118	16778	17368	
1937	17178	17500	17651	17310	11614	18184	16712	10998	8125	8996	8557	7930	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	27365	27847	28331	28131	23801	-	44085	33465	17521	17072	16961	15771	
1940	15805	15502	15591	15092	15991	20919	23196	17567	9975	10683	10965	-	
5 Av.													
Avge	13164	13423	13418	13178	12744	15870	24943	16735	9891	10000	10453	10369	
CLEAR CREEK RESERVOIR													
Avge. to 1930	4940	5055	5184	5618	4943	6915	7645	5149	4678	4678	5959	4251	
1931	2629	2835	2795	2793	2795	2517	1502	920	0	34	262	262	
1932	770	1025	1025	1025	1113	1344	6238	2675	1552	1552	1605	-	
1933	-	-	-	-	-	-	-	-	-	-	-	2138	
1934	2138	2265	2138	2264	2264	792	210	169	169	1133	160	161	
1935	161	161	161	161	161	727	9851	7622	1752	2140	858	858	
1938	0	0	0	0	205	10774	9770	5832	7376	3950	1868	870	
1937	167	167	167	167	0	2651	3992	2291	0	0	0	0	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	4049	4460	4649	5095	3499	-	688	487	502	502	538	776	
1940	776	1006	1006	1006	1006	1084	931	693	135	337	776	-	
5 Av.													
Avge	1349	1528	1531	1602	1338	2770	4076	2561	1436	1206	1752	924	
TURQUOISE-DIX RESERVOIR													
Avge. to 1930	2223	2663	2780	2780	2666	2214	1918	2039	1974	1927	1647	1944	
1931	1955	2768	2768	2768	2768	2676	2365	1315	165	0	0	0	
1932	1509	2003	1523	2967	2858	1918	2145	1433	1052	506	358	420	
1933	957	1203	1251	1251	1251	3832	4260	2982	2780	2197	968	916	
1934	916	968	968	968	892	506	91	201	65	0	0	0	
1935	0	0	165	0	10	777	4326	3837	3862	3723	3738	3723	
1936	4326	4326	4326	4218	3568	3812	3297	2721	1200	3198	3693	3222	
1937	3222	3712	4222	4222	3820	3712	2896	1818	957	1257	1109	935	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	2661	2762	3081	3520	3297	2661	1998	750	379	0	0	0	
1940	0	576	576	591	555	698	500	277	251	220	401	-	
5 Av.													
Avge	1727	2033	2096	2279	2124	2287	2386	1704	1523	1231	1139	1150	

* Average of calculated monthly averages.

COLORADO WATER CONSERVATION BOARD - Engineering Department

STORAGE ON FIRST OF MONTH IN ACRE FEET
IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

Source of Data: Official Records of Colorado State Engineer, 1931-1960 inclusive.
Handwritten figures are calculated values.

Year	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	AVERAGE STORAGE
CITY OF COLORADO SPRINGS RESERVOIRS													
Rec.	(5-year Record of years prior to 1931. Averages calculated from values in Exhibit 66)												
1930	4123	3988	3689	3311	3302	4114	4766	5014	5192	5075	4514	4274	4286
31	4666	4512	4114	3574	3267	3909	5103	5175	4540	3701	3456	2512	4047
32	2374	2534	2110	1809	1596	1715	1486	1694	1892	1789	993	-	1803
33	-	-	-	-	-	-	-	-	-	-	-	4260	-
34	4016	3964	3684	3437	3500	4195	3609	2761	2074	1127	952	619	2856
35	395	332	285	395	395	881	3064	289	4858	5084	4637	5335	3179
36	4165	4192	3151	2969	2370	3798	3628	2973	1200	5130	4970	4997	3537
37	4657	4292	3243	2756	2791	3126	2878	2634	2298	1766	1826	1533	2812
38	-	-	-	-	-	-	-	-	-	-	-	-	
39	-	4318	3903	-	3219	-	-	-	4185	4185	-	1823	
40	1823	-	1786	997	615	1430	-	1572	-	-	1785	-	
Ave	3156	3348	2866	2270	2224	2722	3295	2443	3665	3332	2660	2759	2851 *
FOUNTAIN VALLEY RESERVOIR NO. 2													
Rec.	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)												
1930	1840	3212	1207	1676	1708	1231	3372	2072	1395	1312	1188	1122	2771
31	3128	1898	1898	1898	1898	1898	3214	1496	240	151	151	151	2778
32	1622	2571	3128	3128	3214	2785	2076	1180	1180	810	708	-	2080
33	1372	2240	3214	3214	3405	1665	4114	2785	2571	2076	1910	1496	2756
34	2571	3894	1665	1987	1898	3644	2140	1094	708	932	532	532	2532
35	606	708	1496	1718	1665	3214	2571	1622	810	912	1116	1116	1680
36	1370	2571	3128	3128	3128	3000	2240	1116	1622	1622	3000	2571	2450
37	3000	3894	1898	1898	5076	3894	3128	1622	532	912	912	991	2788
38	1214	2240	1718	1910	2394	2785	2785	2940	1622	3405	3405	3405	2415
39	4520	5061	5061	5076	5076	4114	2785	1718	912	532	532	550	3000
40	564	708	963	1011	1011	1496	1291	912	151	391	532	-	815
Ave	2030	2879	3378	3440	3565	3451	2487	1575	1036	1136	1280	1277	2308 *
CUCHARAS RESERVOIR													
Rec.	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)												
1930	16562	16403	16518	16954	15260	19791	19091	17715	18925	17659	16391	16172	16581
31	12992	15380	11988	11988	15380	13490	9630	7080	4630	0	0	0	8636
32	0	0	1880	1880	1880	1640	1760	1250	3080	1940	1940	1880	1864
33	1640	1640	1640	1640	1640	1160	9662	7300	6950	8010	8010	7868	5013
34	6850	6104	6080	6290	6290	1880	800	800	0	0	0	0	2878
35	-	-	-	-	-	1150	9576	1774	6090	9880	-	-	
36	-	1956	1956	1993	14336	6090	6600	21690	32214	35149	27140	27077	15703
37	26260	26240	26240	23932	29200	20510	16396	12120	4340	6370	4988	4402	16382
38	-	-	-	-	-	-	-	-	-	-	-	-	
39	1940	1816	1818	2661	2108	1160	1103	805	656	163	316	218	1282
40	314	419	419	419	419	562	522	522	322	322	322	7	5363
Ave	7087	6819	7254	7096	8667	5791	6096	6232	6391	6459	5337	5925	6605 *
LAKE HENRY RESERVOIR													
Rec.	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)												
1930	6370	6470	6711	6520	6660	6299	5046	4730	4567	2743	2362	3626	4922
31	3134	6173	6517	5753	5739	3961	3408	627	343	1100	922	0	3106
32	8217	6209	9912	5736	5312	1858	1787	1121	758	758	0	0	2639
33	-	-	-	-	-	-	-	-	-	-	-	1984	-
34	1780	1661	1849	1759	1633	1026	0	0	0	0	0	0	809
35	0	0	0	0	0	0	2865	3147	3727	2630	2096	1693	1363
36	1662	2701	5177	4850	3345	5139	4897	6019	4860	3510	3147	2705	4000
37	4617	5916	6011	5814	4617	3597	3597	2868	2343	2127	1662	1391	3713
38	-	-	-	-	-	-	-	-	-	-	-	-	
39	5223	5469	5617	5614	5130	5321	-	2630	2630	2630	1661	1128	3946
40	969	2630	5617	5469	4384	-	3858	4031	3166	2530	1849	-	3652
Ave	2650	3845	4588	4374	3770	2986	2916	2555	2230	1911	1362	1113	2842 *

* Average of calculated monthly averages.

COLORADO WATER CONSERVATION BOARD - Engineering Department

STORAGE ON FIRST OF MONTH IN ACRE FEET
IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

Source of Data: Official Records of Colorado State Engineer, 1911-1940 inclusive.
Handwritten figures are calculated values.

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	AVG. STOR.
LAKE MEREDITH RESERVOIR													
Avge. to 1930	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66) 13058	20760	21981	21660	20120	17538	15116	7210	6491	5931	5109	7336	
1931	5680	20573	26288	26833	25897	18453	12862	8892	2110	0	0	0	
1932	0	2617	4991	3573	2698	0	0	0	0	0	0	0	
1933	0	0	0	0	0	0	0	0	0	0	0	0	
1934	0	0	0	0	0	0	0	0	0	0	0	0	
1935	0	0	0	0	0	0	0	0	0	0	0	0	
1936	0	0	0	0	0	0	0	0	0	0	0	0	
1937	0	0	1274	0	0	0	0	0	0	0	0	0	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	922	3643	11513	21761	22095	16959	2922	500	0	0	0	0	
1940	0	0	0	-	0	0	0	0	0	0	-		
5-Yr Avge													
Avge	734	3981	4852	6896	5832	3935	1754	1044	238	0	0	0	
DYE RESERVOIR													
Avge. to 1930	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66) 2143	2652	2689	2398	2135	1740	2094	1475	2243	1825	1012	1364	
1931	4570	4825	4821	4782	4659	3867	2452	1953	1798	1346	0	0	
1932	951	2118	2009	1939	1851	0	817	1371	0	0	0	0	
1933	-	-	-	-	2370	1438	1531	1501	2066	1911	2370	2743	
1934	2516	2683	2220	1688	1630	0	0	0	0	0	0	0	
1935	0	0	0	0	0	2326	3761	2174	864	1296	1266	776	
1936	841	2141	4139	3156	1560	3331	1885	2362	2081	2031	1126	1121	
1937	1218	1518	2683	2618	1189	262	0	0	0	321	86	110	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	2762	2901	3165	3165	2828	1087	576	0	0	0	0	0	
1940	0	0	136	110	0	211	0	0	0	0	0	-	
5-Yr Avge													
Avge	1590	2070	2386	2186	1743	1247	1225	1040	756	771	572	632	
HOLBROOK NO. 1 RESERVOIR													
Avge. to 1930	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66) 4093	4747	4901	4679	4263	3509	2659	1999	2387	2174	1793	2405	
1931	3447	4305	4317	4214	4069	3972	2173	1660	1419	1152	0	1	
1932	3643	4342	4342	4088	3905	657	526	350	0	0	0		
1933	0	0	3600	3233	4139	4956	2835	1956	2199	1795	408	0	
1934	0	408	3280	1315	1207	202	0	0	0	0	0	0	
1935	0	0	0	0	0	368	1492	1823	1722	532	981	450	
1936	1601	4293	4495	4492	5035	5290	501	3351	2698	2284	1551	1561	
1937	2918	3670	3792	3670	3615	1562	855	664	602	695	217	209	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	4005	4315	4312	4312	4200	2146	980	240	58	0	0	0	
1940	0	1324	3324	2885	2716	1621	552	205	0	0	0		
5-Yr Avge													
Avge	1738	2532	3296	3158	2985	2364	1903	1472	940	745	307	265	
HORSE CREEK RESERVOIR													
Avge. to 1930	(5-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66) 6971	10206	11168	11214	9165	7961	9003	8735	12794	9829	6847	7178	
1931	14153	15512	16108	14909	12833	9200	3865	0	0	0	0	0	
1932	0	0	0	0	0	0	495	0	0	0	0	0	
1933	0	0	0	264	4312	7912	11444	1826	1922	0	0	0	
1934	0	0	0	0	0	0	0	0	0	0	0	0	
1935	0	0	0	0	0	3210	8529	7063	0	686	0	0	
1936	0	0	3467	2750	0	6306	13450	13269	17144	8852	8260	7941	
1937	8086	8086	8144	7633	7294	5777	2781	0	426	578	0	0	
1938	-	-	-	-	-	-	-	-	-	-	-	-	
1939	2866	4022	5704	8874	8250	7035	4220	0	0	0	0	0	
1940	0	0	0	0	0	0	0	0	0	0	0	-	
5-Yr Avge													
Avge	2789	3469	3776	3937	3633	4330	3965	2662	2466	1124	907	882	

* Average of calculated monthly averages.

COLORADO WATER CONSERVATION BOARD - Engineering Department

STORAGE ON FIRST OF MONTH IN ACRE FEET
IN PRINCIPAL RESERVOIRS OF ARKANSAS RIVER BASIN - COLORADO

Source of Data: Official Records of Colorado State Engineer, 1931-1940 inclusive.
Handwritten figures are calculated values.

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	AVERAGE STORAGE
ADOBE CREEK RESERVOIR													
(9-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)													
1930	19419	23040	26036	26355	21894	20628	28207	23860	25256	25143	18375	18855	22989
1931	31961	37075	39193	39193	46335	28224	23306	0	0	0	0	0	20661
2	0	0	0	0	0	0	0	0	0	0	0	0	0
3	-	-	-	-	-	-	-	-	-	-	-	0	-
4	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	5184	5190	1187	0	0	0	0	652
6	0	0	0	0	0	0	0	3110	4143	2693	2200	2009	1180
7	2009	2009	1185	1797	1185	0	2693	0	0	913	0	0	1033
8	-	-	-	-	-	-	-	-	-	-	-	-	-
9	8495	8596	8415	8432	8166	1666	961	0	0	0	0	0	3936
1940	0	0	0	0	0	0	0	0	0	0	0	-	0
Ave*	5321	5960	6137	6178	6998	4509	3764	575	518	451	275	251	3417*
GREAT PLAINS RESERVOIRS													
(9-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)													
1930	41867	47142	52095	51894	50256	50323	50938	55271	44909	43611	41251	42796	47556
1931	80902	81571	81983	70954	69317	67225	60118	6574	7137	9879	6923	6134	40528
2	6172	6172	3987	2725	2704	2530	2006	1657	817	1890	0	0	2605
3	-	-	-	-	-	-	-	-	-	-	-	0	-
4	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	777	65
6	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0
8	-	-	-	-	-	-	-	-	-	-	-	-	-
9	6111	6386	6113	6556	6059	5459	4627	3974	3290	2785	2551	1987	4667
1940	1901	1815	1987	2199	1815	1566	0	0	0	0	0	-	1031
Ave*	9427	9493	9496	10312	9989	9596	8344	7526	6406	6466	5957	5112	6078*
MODEL RESERVOIR													
(9-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)													
1930	7293	7761	8401	8687	9040	9736	7881	7698	9124	6902	6822	7318	8055
1931	12789	13307	13517	11603	11385	15141	11775	7390	5105	3757	4364	4430	10030
2	5522	6684	6684	6684	6352	5339	5393	3384	0	60	727	-	4255
3	-	-	-	-	-	-	-	-	-	-	-	2736	-
4	3136	3136	3400	3069	2736	0	0	0	0	0	0	0	1290
5	0	0	0	0	0	3378	1386	2819	6601	3702	3752	622	1338
6	5326	4127	3927	3203	2622	4869	2086	1754	1336	547	1754	1629	2593
7	2771	2771	2771	2418	1754	0	5225	0	547	3349	2672	2672	2246
8	-	-	-	-	-	-	-	-	-	-	-	-	-
9	8229	8767	9192	8974	8456	6016	2114	0	0	0	0	0	4315
1940	0	468	1207	1273	1307	834	0	0	75	1902	1606	-	707
Ave*	4472	4908	5087	5028	4702	4447	3501	1893	958	1575	1469	1727	3342*
TWO BUTTES RESERVOIR													
(9-year Record of years prior to 1931. Averages calculated from values in Kan. Exhibit 66)													
1930	16619	14139	14358	13804	13607	12087	11612	11733	10892	9350	14336	9181	12686
1931	5364	5364	5456	5828	5457	1963	2166	1761	2303	137	2160	2193	3344
2	2610	1963	2987	3260	3260	3123	7615	1622	3205	2987	3994	-	3596
3	-	-	-	-	-	-	-	-	-	-	-	10174	-
4	7815	7315	7125	7365	7163	9876	4224	1405	1405	1405	3606	3508	5628
5	3425	3370	3315	3260	3041	5828	8018	3172	7113	11952	11698	10555	6279
6	9175	9538	9666	9539	8788	29951	32741	32546	37650	34716	32741	33657	24253
7	32924	32190	31824	30926	28656	24109	21332	29929	22105	21499	23215	22771	24965
8	-	-	-	-	-	-	-	-	-	-	-	-	-
9	28961	28656	27523	27305	26869	24332	22660	22105	22105	18194	16779	15994	23454
1940	11772	11197	11320	11229	11157	12794	11762	8555	9820	9660	6305	-	11876
Ave*	13172	12879	12887	12776	12176	13697	14190	14137	13601	13335	12550	14146	13260*

* Average of calculated monthly averages.

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IRRIGATED ACREAGE DATA

AVERAGE IRRIGATED ACREAGE - ARKANSAS RIVER BASIN, COLORADO
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for years of record prior to 1931, from
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IRRIGATED ACREAGE - ARKANSAS RIVER BASIN, COLORADO
SEGREGATION BY WATER DISTRICTS
FOR THE YEARS 1931-1940 INCLUSIVE
from
Official Records of Colorado State Engineer

CALCULATED AVERAGE IRRIGATED ACREAGE - ARKANSAS RIVER BASIN, COLORADO
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FOR THE PERIOD OF YEARS FOLLOWING 1930
Included are: Page
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IRRIGATION OF AGRICULTURAL LANDS, ARKANSAS RIVER BASIN
COLORADO AND KANSAS
from
16th Census of the United States, Census of Irrigation - Colorado
and Census of Irrigation - Kansas

IRRIGATED FARMS - 1939; AREA IRRIGATED - 1939, 1929 AND 1919;
IRRIGABLE AREA IN ENTERPRISES - 1940, 1930 AND 1920; AREA WORKS WERE
CAPABLE OF SUPPLYING WITH WATER - 1940, 1930 AND 1920
from
Basin Table 1 and County Table 1;
Census of Irrigation - States of Colorado and Kansas

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Basin Totals as Reported 4
Totals for Basins above vicinity of Garden City, Kans. 4

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IRRIGATED ACREAGE IN SCOTT COUNTY, KANSAS

from

U. S. Geological Survey, Water Supply Paper 886, 1940

and

16th Census of the United States, 1940
Irrigation of Agricultural Lands - Kansas

IRRIGATED ACREAGE IN THE SCOTT COUNTY SHALLOW-WATER BASIN, 1931-1939

AREA IRRIGATED - SCOTT COUNTY - 1919, 1929 AND 1939

Items include:

	Page
Irrigated acreage, 1931-1939 - U.S.G.S. Data	5
Area irrigated - 1919, 1929 and 1939 - 16th Census Data	5

COLORADO WATER CONSERVATION BOARD - Engineering Department

IRRIGATED ACREAGE - ARKANSAS RIVER BASIN, COLORADO
SEGREGATION BY WATER DISTRICTS
Values in Acres

Source of Data: Official Records of Colorado State Engineer.
Handwritten figures are calculated values.

	WATER DISTRICTS												PERCENT OF 1930 AVGE.
	10	11	12	13	14	15	16	17	18	19	67	TOTAL	
Avge. to 1930	15640	23801	22327	17816	112611	7581	33816	163846	5408	33769	59748	496363	100
1931	20487	22544	22152	21993	132101	8557	49004	164274	5981	27111	61173	535377	108
1932	12757	23417	20320	21936	119935	6271	37579	163572	5184	22362	66908	500241	101
1933	18751	25283	21320	22203	108069	7581	41482	163140	4432	20120	63992	496373	100
1934	11132	33465	17783	12868	53891	7358	35929	153628	4677	17234	68408	416373	84
1935	12357	25440	19385	22298	93197	7452	40349	154570	4009	24048	68754	469859	95
1936	12211	27412	18724	20135	106606	8527	41876	158409	3195	23059	73206	493360	99
1937	18121	33954	19139	22316	101127	7181	41361	153221	1625	28288	62253	488886	98
1938	11654	32142	20707	23018	103030	8196	42273	158416	1478	23555	62217	486686	98
1939	13038	30860	20479	17249	100578	8077	38263	152878	1415	21737	61098	465672	94
1940	12255	36500	18328	16347	88456	6900	35553	150817	2937	26219	60857	455169	92
31-41 Avge.	14276	29102	19834	20036	100529	7610	40367	157293	3493	23373	64887	480800	97

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Colo. Ex. 196 (Sheet 3 of 5)

COLORADO WATER CONSERVATION BOARD - Engineering Department

IRRIGATION OF AGRICULTURAL LANDS
ARKANSAS RIVER BASIN.
COLORADO AND KANSAS
FROM
16th CENSUS OF THE UNITED STATES: 1940

BASIN TABLE 1 Item No.	IRRIGATED FARMS IRRIGATED AND IRRIGABLE AREAS	BASIN TOTALS AS REPORTED COLO.	KAN.	COUNTY TABLE 1 Item No.	TOTALS FOR BASIN ABOVE VICINITY OF GARDEN CITY COLO. (1)	KAN. (2)
1	Irrigated Farms - 1939 - number	7,837	1,291	3	7,816	478
2	Area Irrigated - 1939 - acres	469,535	88,196	18	469,168	56,341
6	Area Irrigated - 1929 - acres	558,072	69,879	22	557,933	60,072
7	Area Irrigated - 1919 - acres	641,476	46,539	23	641,476	40,660
8	Increase or Decrease (-), 1929-1939 p'ct.	- 15.9	26.2	24	- 15.8	- 6.2
9	Irrigable area in enterprises - 1940 - acres	672,627	127,950	25	671,840	78,477
10	Irrigable area in enterprises - 1930 - acres	762,208	91,361	26	761,915	76,861
11	Irrigable area in enterprises - 1920 - acres	938,533	98,982	27	938,533	63,378
15	Area works were capable of supplying with water-1940-acres	622,846	124,700	30	622,369	78,065
16	Area works were capable of supplying with water-1930-acres	690,955	81,177	31	690,815	67,997
17	Area works were capable of supplying with water-1920-acres	709,068	64,457	32	709,068	54,288
18	Increase or decrease (-), 1930-1940 p'ct.	- 9.9	53.6	33	- 9.9	14.8

(1) Basin totals as reported minus totals reported for Cimarron Basin.

Colo. (Sheet

Source of Data: U. S. Geological Survey, Water Supply Paper 886, 1940 and
16th Census of the United States, 1940 - Irrigation of Agricultural Lands - Kansas

From U. S. G. .S. Water Supply Paper 886, page 185:

"The following table is based on records of the Division of Water Resources of the Kansas State Board of Agriculture and shows the increase in irrigated acreage during the last 9 years."

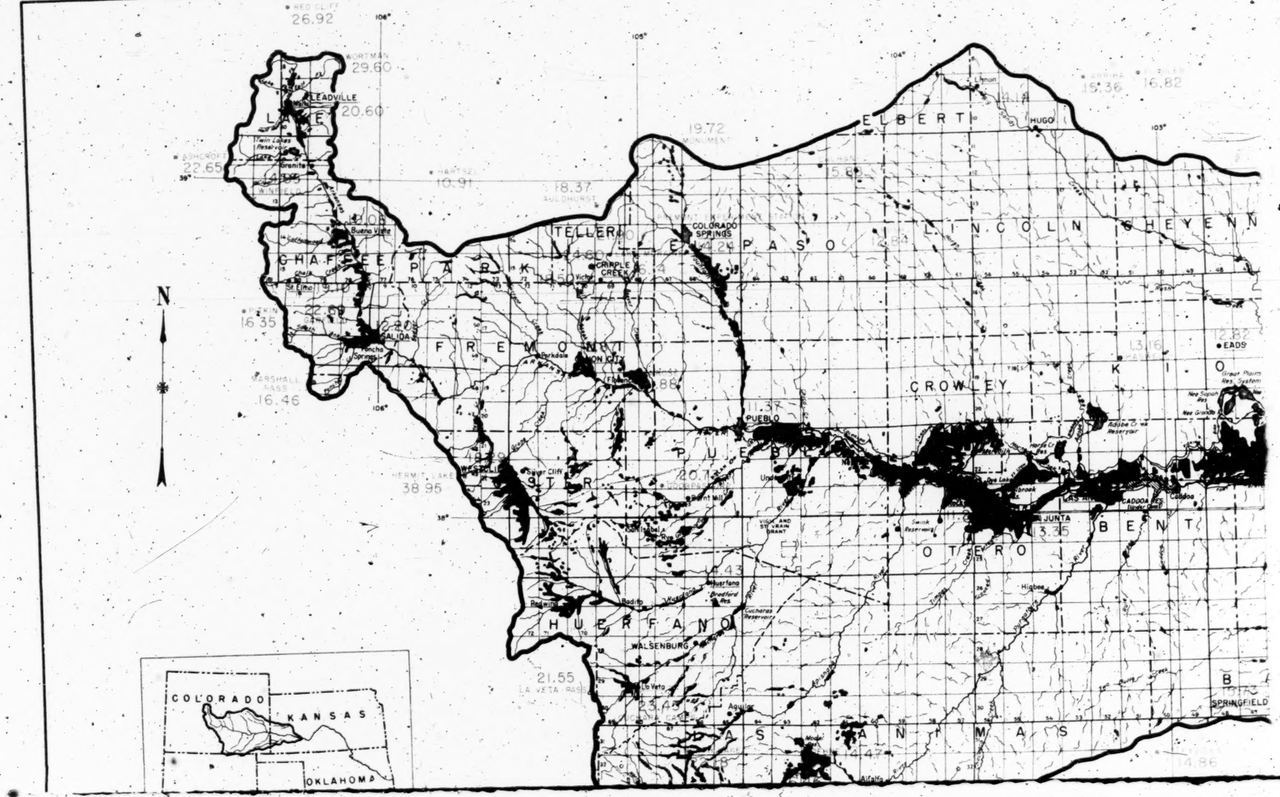
IRRIGATED ACREAGE IN THE SCOTT COUNTY SHALLOW-WATER BASIN, 1931-1939

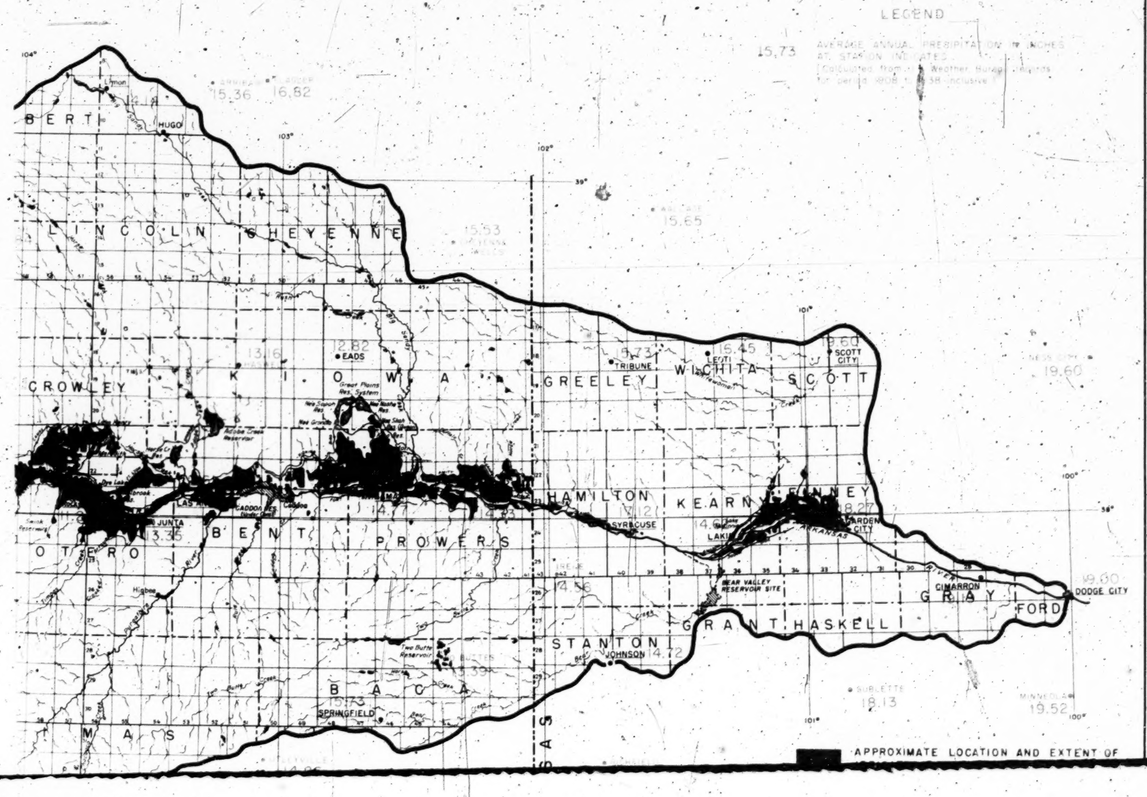
YEARS	1931	1932	1933	1934	1935	1936	1937	1938	1939
ACRES	2262	1021	2035	3859	4234	3849	6828	10355	12000

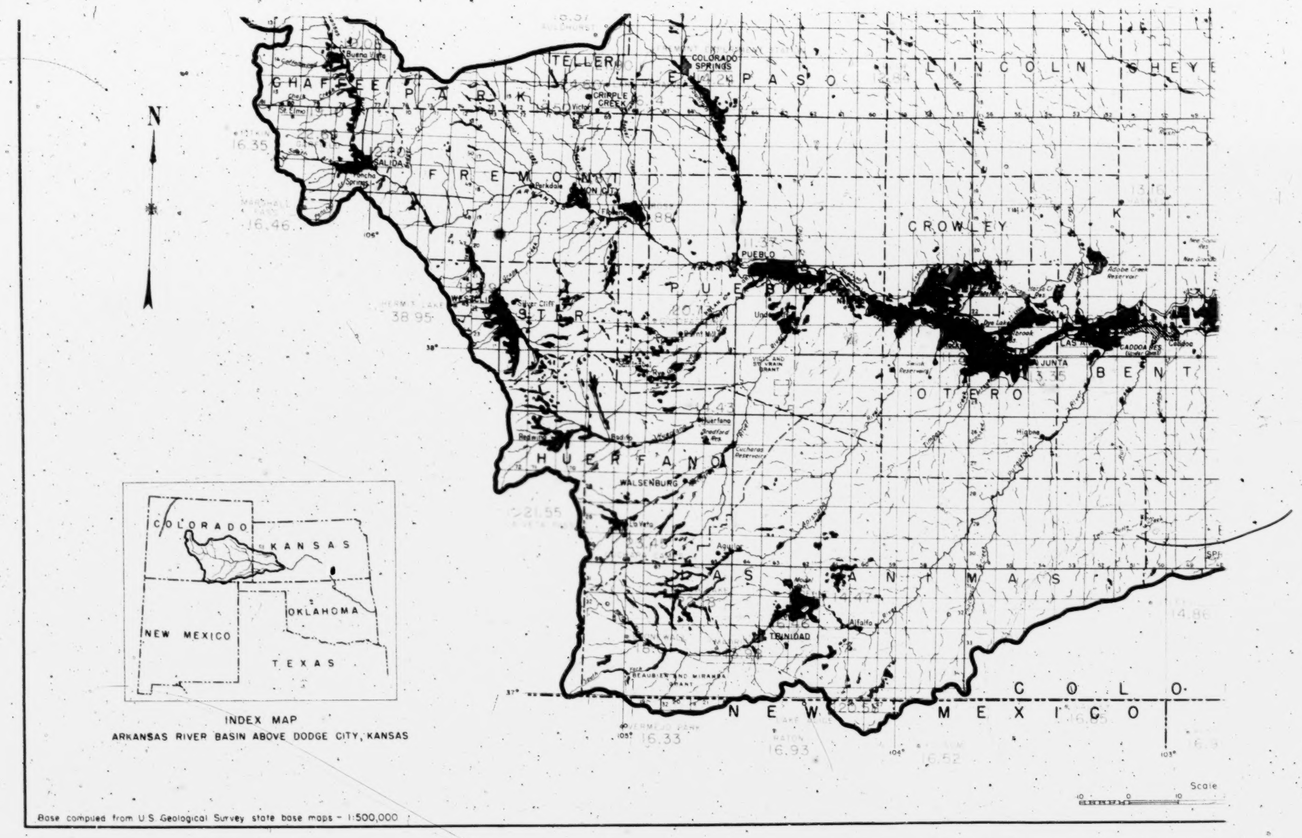
From Census of Irrigation - Kansas, County Table 1

Item No.	Item	Scott Co.
23	Area irrigated - 1919 - acres	3047
22	Area irrigated - 1929 - acres	3432
18	Area irrigated - 1939 - acres	13389

Colo. Ex. 196
(Sheet 5 of 5)

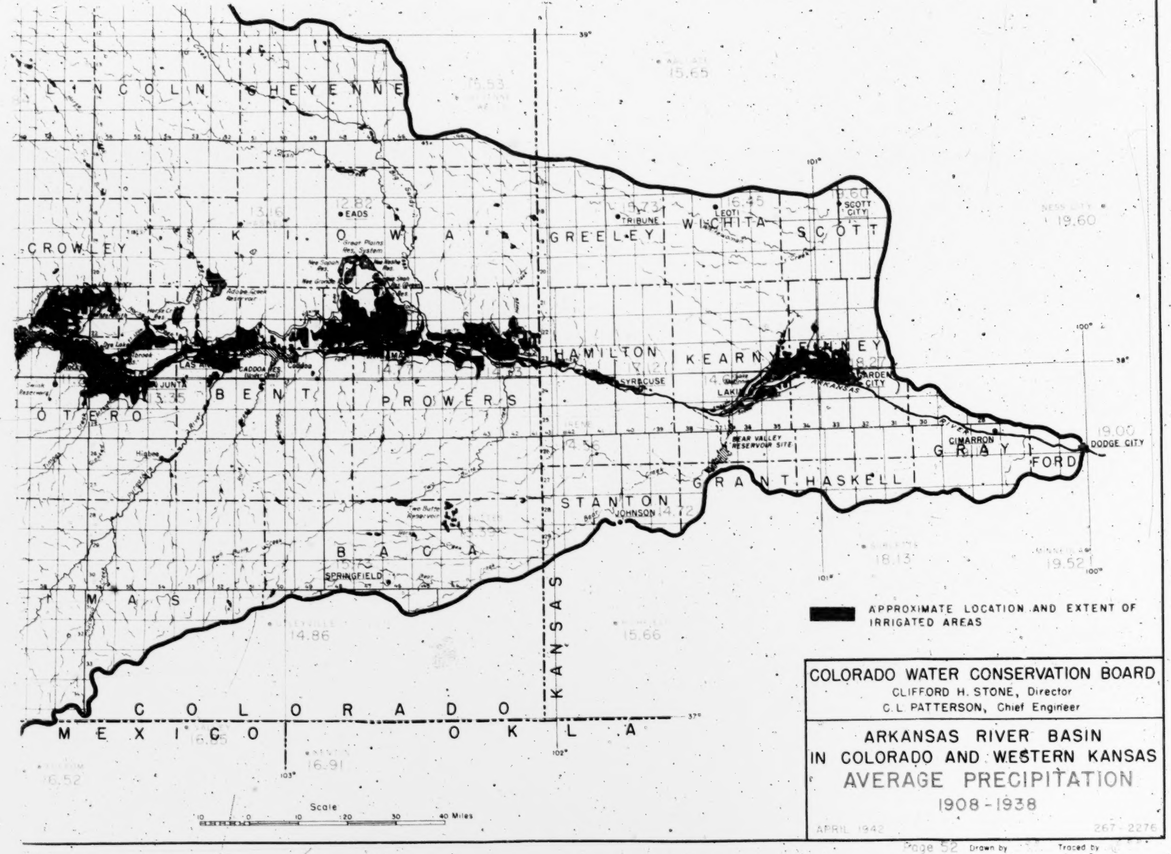

N
LAKE
CHAFFEE
PARK
FREMONT
TELLER
EL PASO
ELBERT
LINCOLN
CHEYENNE
CROWLEY
KIOWA
PUEBLO
OTERO
BENT
HUERFANO
LAS ANIMAS
LEADVILLE
HUGO
COLORADO SPRINGS
CRIPPLE CREEK
CANON CITY
PUEBLO
EADS
JUNTA
LAMAR
WALSENBURG
SPRINGFIELD
TRINIDAD
COLORADO
KANSAS
OKLAHOMA


LEGEND
ELBERT
LINCOLN
CHEYENNE
CROWLEY
KIOWA
GREELEY
WICHITA
SCOTT
EADS
TRIBUNE
SCOTT CITY
HAMILTON
KEARNY
PROWERS
BENT
OTERO
SYRACUSE
GARDEN CITY
LAKIN
JUNTA
LAMAR
SPRINGFIELD
BEAR VALLEY RESERVOIR SITE
CIMARRON
DODGE CITY
GRAY
FORD
STANTON
GRANT
HASKELL
JOHNSON
BACA
LAS ANIMAS
APPROXIMATE LOCATION AND EXTENT OF



INDEX MAP
ARKANSAS RIVER BASIN ABOVE DODGE CITY, KANSAS

Base compiled from U.S. Geological Survey state base maps - 1:500,000



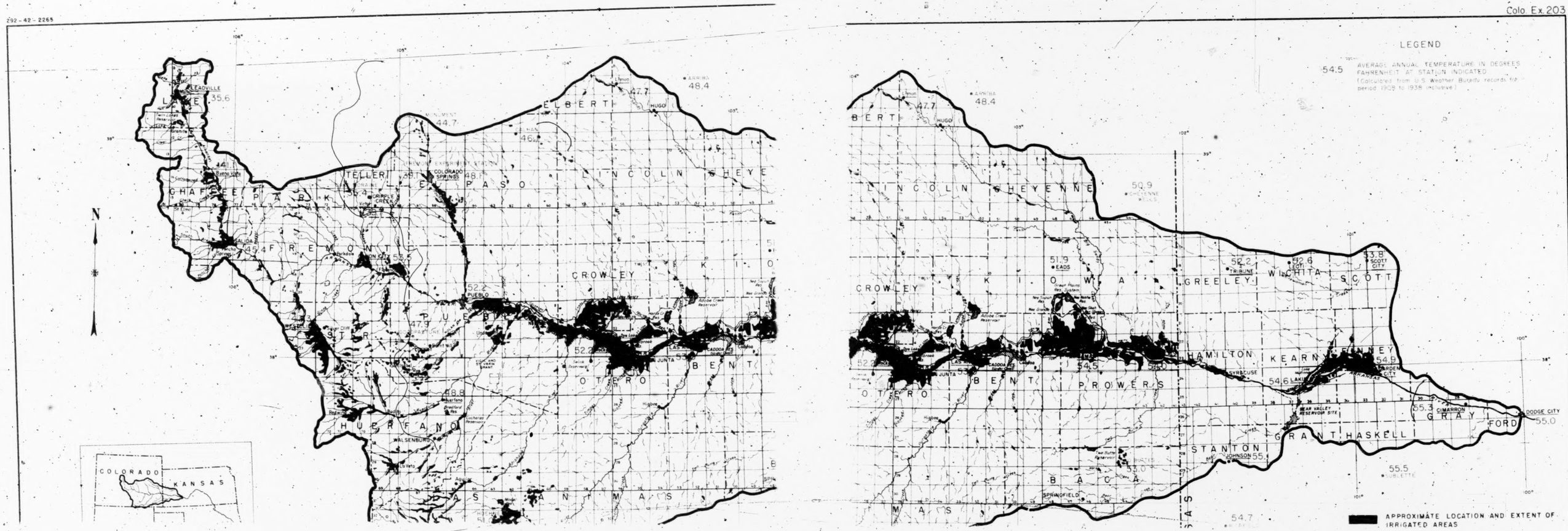
APPROXIMATE LOCATION AND EXTENT OF IRRIGATED AREAS

COLORADO WATER CONSERVATION BOARD
CLIFFORD H. STONE, Director
C.L. PATTERSON, Chief Engineer

ARKANSAS RIVER BASIN IN COLORADO AND WESTERN KANSAS AVERAGE PRECIPITATION 1908-1938

APRN. 1948 267.2276

Page 52 Drawn by Traced by


LEGEND
54.5 AVERAGE ANNUAL TEMPERATURE IN DEGREES FAHRENHEIT AT STATION INDICATED (Calculated from U.S. Weather Bureau records for period 1908 to 1938 inclusive)
APPROXIMATE LOCATION AND EXTENT OF IRRIGATED AREAS
N
COLORADO
KANSAS
LAKE
CHAFFEE
PARK
FREMONT
TELLER
EL PASO
ELBERT
LINCOLN
CHEYENNE
CROWLEY
KIOWA
PUEBLO
OTERO
BENT
PROWERS
HUERFANO
LAS ANIMAS
HAMILTON
KEARNY
GREELEY
WICHITA
SCOTT
GRANT
HASKELL
STANTON
GRAY
FORD
MORTON
BACA
LEADVILLE
SALIDA
CRIPPLE CREEK
COLORADO SPRINGS
PUEBLO
JUNTA
LAS ANIMAS
CAMDEN
WALSENBURG
TRINIDAD
SPRINGFIELD
HUGO
EADS
TRIBUNE
SYRACUSE
LAKIN
JOHNSON
SUBLETTE
SCOTT CITY
GARDEN CITY
DODGE CITY
CIMARRON
BEAR VALLEY RESERVOIR SITE
35.6
44.7
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55.0
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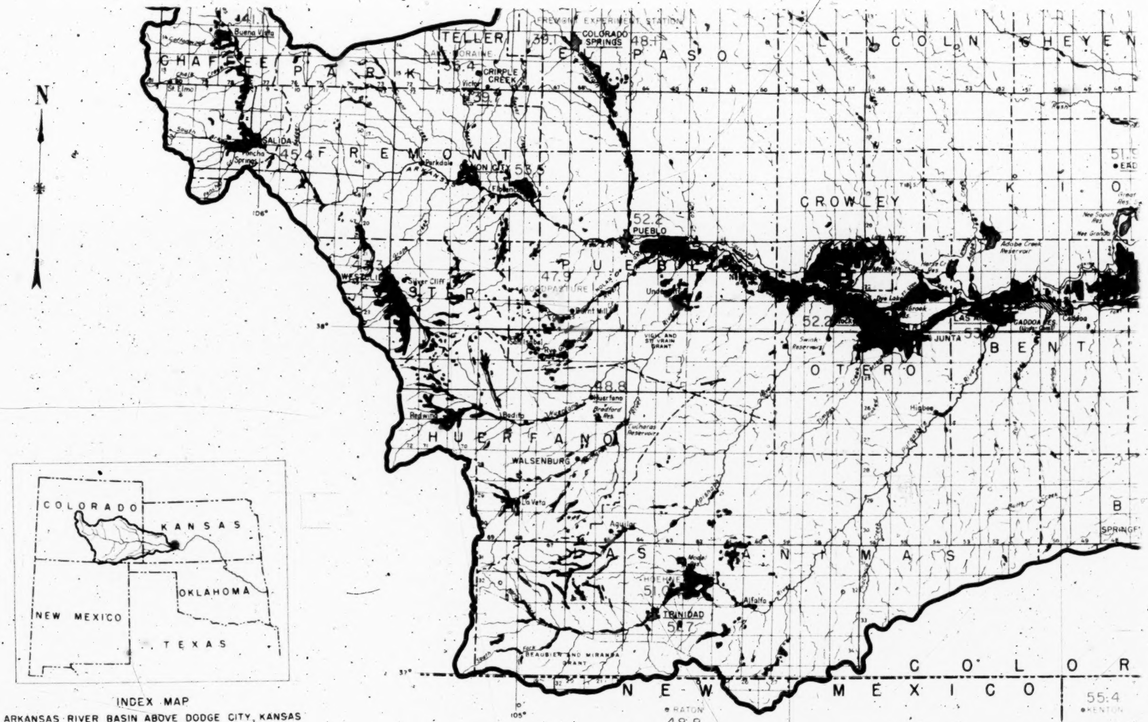
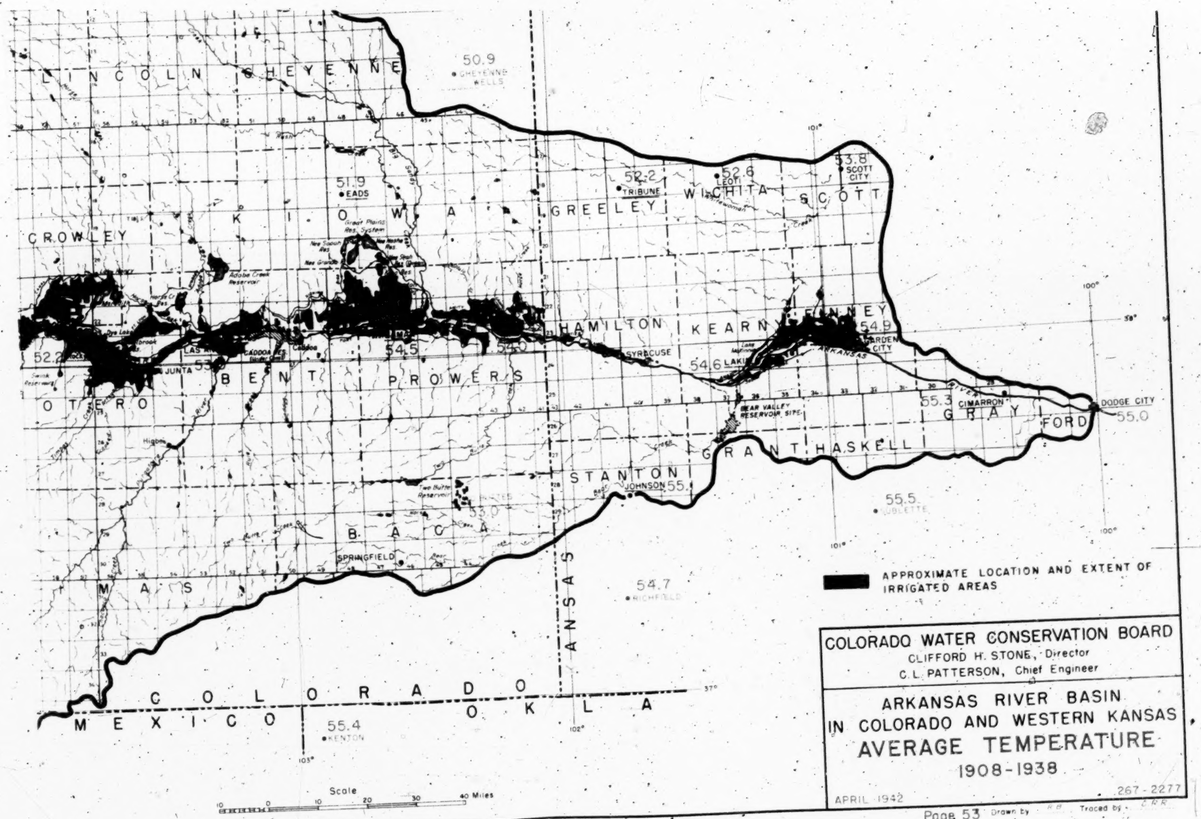


INDEX MAP
ARKANSAS RIVER BASIN ABOVE DODGE CITY, KANSAS

e compiled from U.S. Geological Survey state base maps - 1:500,000



APPROXIMATE LOCATION AND EXTENT OF IRRIGATED AREAS

COLORADO WATER CONSERVATION BOARD
CLIFFORD H. STONE, Director
C. L. PATTERSON, Chief Engineer

ARKANSAS RIVER BASIN
IN COLORADO AND WESTERN KANSAS
AVERAGE TEMPERATURE
1908-1938

APRIL 1942 267-2277

 Drawn by [illegible] Traced by [illegible]

286-1861

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STREAM FLOW RECORDS

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COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

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(Sheet 2 of 5

ARKANSAS RIVER AT CANON CITY, COLO.

Station Located in Sec. 32, T 18 S, R 70 W of 6th P.M. at Altitude 5,363 feet.

Drainage Area above Station 3,090 sq. mi.

Records by State Engineer and U. S. Geological Survey.

Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

Date 6-12-42

Checked J.B.S.

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT.	OCT.	NOV.	DEC.	ANNUAL	Accr-Depletion
1908	20000	19000	20000	22000	30000	81251	51620	34814	13062	15277	17268	17000	341271	232759
1909	16000	15500	18000	29000	45130	170480	124080	73480	81170	38800	31300	25090	668970	531280
1910	26440	19360	33960	48320	111650	110680	39720	29150	20530	21090	17730	18238	497068	360030
1911	18718	16319	23336	17070	65393	152547	134957	56556	26638	73453	32222	23009	638618	450961
1912	20301	16671	21272	20251	80375	166991	143598	54957	22719	22243	20065	21100	619535	464885
1913	20906	20469	21090	26301	66898	96813	60442	26901	23802	23058	21064	21828	428752	300757
1914	21800	19300	21800	20700	69500	165000	151000	81200	28600	27900	21600	25700	659900	518800
1915	23700	19500	22800	32600	47500	125000	81200	42900	26500	25100	22300	22100	491000	355700
1916	22600	20000	33600	31300	67000	139000	112000	83600	30200	29500	30300	29200	668000	469100
1917	28800	29800	21000	23300	50500	177000	142000	57200	28400	17100	19400	21000	615000	434000
1918	20200	23100	22200	20000	60900	200000	85500	48700	32700	25600	25600	23700	588000	447800
1919	28700	21200	25100	30700	99000	105000	84200	48700	34000	26900	28100	30500	582100	421600
1920	22900	21500	22900	18200	67000	177000	108000	75000	32200	25800	30300	27500	628300	477600
1921	23100	18100	19100	20000	61500	201000	129000	87000	38900	29300	27800	26600	661700	517600
1922	22600	19700	22000	22000	76200	137000	71400	52500	27100	17800	20900	20700	512900	389800
1923	17100	15300	19700	20200	58000	142000	136000	82400	47500	16600	36900	29100	651100	494100
1924	28200	25900	21600	40900	97800	177000	76200	55000	18600	20100	19600	20800	605000	469500
1925	20700	16200	17600	12000	60900	69600	62100	37900	26100	22900	19900	20000	365900	216600
1926	17900	17100	19600	27900	66200	129000	89800	59500	18600	15200	20500	18000	498300	390000
1927	17700	16100	21600	19300	78700	132000	103000	64200	45700	30900	23800	21100	603100	432900
1928	25500	18100	19400	17800	80600	120000	91600	59300	21600	17500	18800	20800	511300	395300
1929	19600	15600	20500	22400	58500	124000	78100	93500	66600	33900	26700	21900	581300	443100
1930	21600	23100	19600	32300	47500	99400	62500	65800	25000	17800	18900	20100	455900	339500
1931	18800	16700	17900	19300	42200	55600	27900	16100	11200	11300	12500	20700	270000	172300
1932	15900	15900	15200	14300	68200	115000	91600	48700	21700	16000	17000	15300	456800	359500
1933	18400	20100	13300	11400	36800	136000	57200	28300	19000	15000	11600	18900	389200	288000
1934	16900	13600	12100	16200	68100	34200	18700	19000	11900	11800	12270	16150	215750	169300
1935	15160	12730	10980	9820	20900	114200	99710	68810	28550	23380	20620	20500	466770	366380
1936	19160	15030	12350	33300	118600	119500	77950	88920	32640	26900	21270	20600	586900	470900
1937	15650	14380	17780	23520	77870	81260	58880	32160	15870	13160	12090	19620	382500	283510
1938	18420	15170	15160	18980	63090	163300	86600	53330	31060	29120	21640	22060	535810	411860
AVGE	20459	18206	20475	23814	61466	130510	98756	54166	29398	21871	22319	22071	513767	391166

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

ARKANSAS RIVER AT PUEBLO, COLO.

Station Located in Sec. No. T 20 S, R 65 W of 6th P. M. at Altitude 4675 feet.

Drainage Area Above Station 4730 sq. mi.

Records by State Engineer and U. S. Geological Survey.

Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

Date 6-1-43

Checked T.B.C.

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV.	DEC.	ANNUAL	Accr-Depletion
1908	21800	22200	16500	23428	29532	77716	55242	32500	7031	13610	11824	18400	336083	229969
1909	17200	16700	16300	17600	40766	159538	114983	71830	108479	45993	33798	28280	671467	515136
1910	27790	23490	32960	43200	107780	107820	45320	26070	11460	15860	16900	15312	476908	344990
1911	15898	15255	20357	12889	67755	131758	126581	60060	27564	63678	37210	24456	603455	466681
1912	19052	15870	17500	17930	71324	171066	137798	59531	25206	20854	17757	18800	643168	483935
1913	17032	18327	17419	23266	61400	84880	58536	21398	21719	22074	18744	23673	390888	276419
1914	21300	19500	23700	27800	86100	189000	190000	113000	30300	33000	25750	23800	783250	636800
1915	30700	20400	25600	45000	56300	130000	83000	53900	25500	30600	23600	25100	549100	393700
1916	25000	18900	30900	27800	69500	126000	103000	71600	20900	27600	27900	25200	577100	421600
1917	31200	19600	16700	17000	43000	166000	134000	57200	26600	19900	19800	15700	556400	414000
1918	17500	10600	12100	13000	68300	179000	65800	21200	20800	12600	11500	18600	467600	343100
1919	21000	16000	17500	50500	98800	100000	86100	46200	34100	21900	26100	29000	549500	421700
1920	20200	14600	14800	13600	58300	153000	98200	77500	30900	18600	30600	27900	559800	425900
1921	21500	12200	11500	20100	57500	397000	172000	81200	31100	25200	31300	34700	895300	758900
1922	27600	21100	18600	14900	70100	118000	70700	45700	21300	15200	23600	22000	466700	340700
1923	14900	12100	12500	15800	57600	119000	157000	125000	72000	60100	30980	34600	731300	546200
1924	27600	29500	21000	46900	87900	176000	66400	46900	13300	17600	19300	17800	568800	437000
1925	22000	13000	13500	6130	33700	60100	58700	35800	21200	21600	16800	19100	321630	216480
1926	16700	12300	12500	29900	70700	117000	88700	54300	13400	18000	21100	17900	484500	372000
1927	18700	10700	19500	13400	64600	125000	97200	60600	33900	37300	29300	22900	533100	394700
1928	22600	14200	15300	12300	79300	112000	89800	60400	21500	16200	23900	21800	490200	378500
1929	20000	18900	17000	13500	58900	107000	87900	152000	82100	39500	39500	28000	661400	501500
1930	22600	21600	15300	25200	41100	85700	60600	89200	30700	17100	23000	20000	456500	332500
1931	16100	10300	11600	16100	45800	68700	18400	8620	7680	9720	13300	15700	221820	116100
1932	13000	10500	9780	8210	55700	105000	86700	43700	15700	13300	15300	18000	388890	315010
1933	11200	10800	5500	6130	42500	131000	55100	33100	9940	5210	10600	13800	334980	278070
1934	14000	9160	5700	9100	51700	20500	8100	11600	5060	6810	5310	6990	151310	106660
1935	7810	6810	3070	4670	29820	135600	95780	60170	27720	16720	21790	15410	421870	352760
1936	11580	10700	4320	21970	110500	107000	74290	103600	25230	24500	23530	17810	535030	442590
1937	13620	16210	12110	18180	70070	65100	44130	31170	11140	8570	11590	11770	317180	241060
1938	12080	9800	7780	12160	41230	131300	78770	53760	49850	23260	25940	17820	485360	389360
AVGE	18457	15536	15417	20683	64498	127812	87134	58564	28724	21011	23885	20613	502764	384644

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

ARKANSAS RIVER AT LA JUNTA, COLO.

Station located in Sec. 2, T 24 S, R 55 W of 6th P. M. at Altitude 4058 feet

Drainage Area above Station 12,200 Sq. Mi.

Date 6-17-43

Record by State Engineer, U. S. Geological Survey and A.V.I.D.A.

Checked J.H.E.

Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	Apr-Sept	Oct-Mar
7080	5100	2400	400	2900	15700	17000	7690	1230	45000	2600	7000	126520	44220	82300
2100	400	700	650	3200	33800	35700	32500	66700	12600	9600	11600	193250	156450	36800
3400	14500	8000	6660	17200	19800	38900	25500	1340	650	4800	2680	155570	109600	45970
681	2810	1430	1160	11500	29600	32900	9700	3140	16700	9530	8180	134061	97160	36901
4950	1060	798	3020	15277	29218	38343	31070	7148	11204	17884	5882	175269	121376	53893
5420	28714	3126	9521	11538	20964	13502	3258	1467	9121	8152	4303	91598	63600	30998
2780	1680	7260	10600	46700	158000	65800	11200	6490	11200	6430	6450	373790	334790	39000
5410	1590	7130	16100	38300	113000	22100	17300	9916	12600	6810	1980	279810	247060	32770
12000	9950	3650	12300	21300	23600	21500	30500	2560	5760	3950	4080	155070	111760	40310
2080	778	3120	4660	23500	28700	34680	13500	1330	5560	10100	3920	135918	109590	25858
862	1050	4060	5610	13000	33300	18600	9280	7910	9210	17900	3750	119831	83700	36131
924	916	1230	2100	10600	18400	15100	9720	15100	2030	6610	4510	87300	71020	16280
4850	1510	6150	3610	15900	30800	25900	9780	7910	10800	1930	1350	117900	93900	24000
2820	983	1820	7800	23500	607000	160000	99000	10900	11900	7500	3550	919075	887900	31173
8260	1200	1940	3870	11200	34200	20100	5870	2200	1720	10600	6890	111660	78850	31810
3610	2580	1190	2580	11900	23600	47000	138000	55200	16800	5880	13500	361160	281280	79880
13000	26600	2950	12900	23800	54500	20600	3680	1830	6000	6840	1940	201308	117210	87230
796	896	3470	2170	12800	17700	37900	9900	6010	10600	9060	8000	112808	86780	26028
8220	2170	8360	5780	18500	17600	17900	6950	2250	9230	13000	5770	96680	62980	33700
1140	8270	7320	6010	20800	35570	48000	64000	10900	17800	16600	4540	235000	185210	49790
1860	3280	4300	3500	12200	73800	27100	11800	3430	6940	9220	6520	160550	131230	29320
1560	3600	2680	1810	12600	28700	29700	92800	12900	15200	5760	4660	221690	178310	33380
1330	2570	1430	5400	12100	27800	11000	31600	10800	5880	8090	3810	125160	99000	26160
847	1120	2790	5000	15100	12100	1610	2900	2880	1160	1550	3030	53207	16590	10617
1480	2080	2370	1980	16600	29000	31700	23100	4060	5480	7140	1180	129050	109260	19810
1158	9060	1530	3120	56500	56800	19500	11700	7800	2300	3550	7130	178260	157580	20720
1470	1400	2430	2950	15900	1480	2060	3130	6600	1805	599	1980	40398	35170	11228
2080	1160	1530	1350	11100	11120	33360	13120	10330	8710	10080	8420	172800	140960	31840
1200	2260	1050	5710	13160	20060	52300	97840	12320	18280	11530	6010	275040	231690	43350
2900	2750	3220	9630	32180	28860	10600	6600	21600	1540	3310	6300	129690	109490	20200
9130	5090	2900	6800	23590	31960	30810	10890	36830	11190	10620	8050	192720	142960	49780
3960	3960	3600	5390	20630	51770	30780	19210	11600	10730	8060	5210	184160	152380	31800

Substitution figures are calculated from other records.

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

PURGATOIRE RIVER AT MOUTH NEAR LAS ANIMAS, COLO.

Station located in Sec. 1, T 25 S, R 53 W of 6th P. M.

Drainage Area above Station 3,320 sq. mi.

Date 6-3-43

Record from State Engineer, Amsley Investigations, Kans. Irrig. Commissioner and Meeker-Knapp estimate

Checked T.H.C.

Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	Apr-Sept	Oct-Mar
1860	1580	687	5960	3340	14120	26700	28200	1750	4800	4880	254	83631	70370	13261
2000	310	1200	7560	2690	22600	27800	32100	53400	1790	1500	1750	155200	146350	8770
980	1190	293	29400	8160	2560	13200	13050	1780	5280	1140	413	77386	68150	9236
570	1510	369	945	5700	6150	19800	1860	299	2310	1050	2160	42723	34754	7969
980	1960	1670	4870	10600	35300	11000	7430	12000	3960	1590	860	89716	79200	10516
1180	1690	1500	615	238	8060	1670	128	11100	665	2610	2500	31926	21811	10115
1270	425	1400	358	59900	22900	69800	26400	442	325	0	1160	284360	199800	4560
1810	1190	2000	30900	61900	30300	15900	23000	1430	1900	1430	2560	174260	163430	10650
770	476	2370	11000	1910	238	200	30460	20	6720	2670	1600	61524	46918	14606
1510	825	1120	8290	17800	144	7150	11350	9620	2070	2060	286	61805	54154	7651
5080	1480	4170	5130	1130	3600	21400	7300	8320	7670	5500	8900	79870	46870	33000
310	1780	4370	11500	15400	7540	20600	13000	12600	8050	7150	1430	103530	80460	23090
720	1530	740	1200	6740	5800	7500	17300	8470	18300	1360	2100	71179	46410	24769
1390	966	1620	6980	5500	18900	19600	20700	2580	1690	3610	1230	86556	74260	10296
1420	1930	1780	1390	1090	2710	7300	4160	440	490	1270	1670	25700	17090	8610
2980	1330	1000	504	5180	62500	50800	166000	33900	49200	13700	6870	390604	316884	73520
5830	11200	5520	16400	4300	1360	3020	4480	60	267	1190	984	54611	29620	24991
664	2030	1200	212	2300	3830	46700	25000	3080	1660	2040	1790	89556	80158	9404
8180	2340	2530	17300	22400	17400	13800	2710	42	488	2240	1560	84970	73698	11278
3870	1050	836	266	111	657	81800	95300	15800	5550	1460	892	204774	193916	10858
1150	3110	627	2640	4440	12900	3520	7560	238	2140	1800	2850	115835	103258	11977
3480	2500	5470	2120	6210	17700	11700	75600	3570	590	774	1720	131644	116900	14744
1350	2050	1010	393	5650	2210	14800	39700	9940	36600	1900	3780	119383	72693	46690
3570	7110	11100	11700	12700	6840	565	1270	1100	726	1030	1090	58801	34175	24626
1010	1780	1210	1900	1600	4390	7070	2370	8	184	863	449	22834	17338	5496
1170	4000	668	184	10300	6960	6760	19600	15600	455	643	904	67234	59404	7830
567	816	830	167	812	1810	8730	3520	12100	121	89	280	29822	27139	2683
307	28	12	0	22860	6360	13590	10630	13020	617	837	761	69025	66460	2565
594	463	98	67	18550	3840	15260	21380	883	1430	735	636	66756	62980	3776
112	473	724	354	1960	22220	8340	10200	21080	1390	873	823	72179	66054	6125
557	684	1120	809	6690	11660	16130	6750	11790	2360	1380	1130	64070	56839	7231
1500	1929	1905	5940	11881	12388	19074	23598	8715	5482	2237	1766	96116	81596	11820

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

Colo Ex 204
(Sheet 4 of 5)

ARKANSAS RIVER AT CARDOA, COLO.

Station located in Sec. 7, T. 23 S., R 50 W of 6th P. M.
Drainage Area above Station 10,210 sq. mi.
Prior to March 1938 all values calculated from other Records. Since Mar. 1938 record by State Engineer.
Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

Date Rev. Apr. 1942
Checked

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	[illegible]
1908	21100	8800	4100	3900	2600	26000	121400	53400	5300	107500	8200	9100	296300	13500
1909	6300	4900	1100	5300	4800	52900	43900	66100	128100	12700	11500	11900	350100	30100
1910	18400	17800	10300	2000	25000	19500	44000	52400	2300	3800	5900	5400	231900	16980
1911	3600	3300	8000	1600	17300	25100	60600	7700	1700	21900	13350	15100	180600	11160
1912	8300	13100	11600	12000	20200	62100	37100	59000	19300	12600	15900	7700	284900	21000
1913	5900	3700	8400	10400	8800	28300	12300	1600	5600	9000	11800	9900	119500	6890
1914	9500	9400	11600	14600	159000	191000	146100	72600	7200	12500	10300	8800	645600	58150
1915	6600	7200	10100	67900	89500	134000	35300	90300	14600	17000	12900	7300	493400	43160
1916	12300	16600	7300	17400	20700	28600	22100	79400	6500	11500	11000	8400	232900	16000
1917	14700	7000	5500	7700	28200	28800	35800	19000	12100	9500	12700	6800	198700	13500
1918	6300	5900	9500	11100	9600	31600	30400	9700	15600	11200	14300	9600	168400	11100
1919	3700	5200	9000	24300	29500	25200	31900	21400	15600	5800	11000	7700	190300	14700
1920	7400	5200	6400	5600	13700	29100	36700	25200	17700	21200	8600	7500	191300	13200
1921	6900	5400	5700	11600	25000	666300	183500	136500	11700	15200	11600	6200	1085600	103600
1922	8600	5300	6800	8700	13000	26200	25900	14800	1400	2000	10800	8500	136000	9000
1923	6900	6000	6400	2500	27100	23800	103300	288400	98600	114000	32800	25500	805100	61350
1924	55200	4100	29300	39600	23800	50300	19100	4500	600	4100	6900	6500	249100	14300
1925	5600	4200	5600	1100	13500	22300	106300	42500	9200	12400	14500	8000	245500	17430
1926	7400	6200	10200	21000	28700	33100	28400	7600	1000	1400	12900	6900	167800	12280
1927	5400	3800	6700	5300	11500	30100	133300	168500	20700	21700	19400	7500	435000	31450
1928	5900	6200	4500	4700	21300	136500	31300	10600	3600	6600	13200	13400	313000	26300
1929	9200	7300	6900	4000	12600	33600	32100	157720	17900	17400	12100	11100	322600	25780
1930	9200	8000	6900	4800	15700	28300	18800	54200	22700	40500	11800	13400	233900	14450
1931	4800	8300	9800	12800	24900	18200	3000	2700	2500	1500	2500	4300	96300	6100
1932	2800	4400	5700	3200	12100	27600	29500	21200	3300	3400	5800	2100	119900	9900
1933	2800	5500	21000	3800	81400	52600	26600	48600	30900	2700	4300	9800	271100	24600
1934	7100	59000	4200	2300	13100	5000	8600	3400	26900	1400	1400	2000	81300	5950
1935	2700	1300	1600	1200	51300	57700	44000	19800	22100	9100	9500	7700	228300	19600
1936	5200	3100	2000	3300	62000	20600	68900	121800	11400	19500	12000	7500	337300	29800
1937	4000	4800	4700	7200	22100	56800	11500	8500	45900	2600	3500	7500	181300	15400
1938	8600	6200	3400	5000	21640	38240	48900	12830	46950	15230	13710	11680	241170	17365
AVGE.	9200	8510	7210	11540	31590	66860	48610	54100	20410	17730	11330	9060	295710	23807

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

ARKANSAS RIVER AT LAMAR, COLO.

Station Located in Sec. 30, T 22 S, R 46 W of 6th P. M. at Altitude 3610 feet.
Drainage Area above Station 19,800 sq. mi.
Records by State Engineer, U. S. Geological Survey and A. V. D. A.
Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

Date 6-12-42
Checked J. B. S.

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	[illegible]
1908	25300	7100	280	70	270	14000	17300	44000	100	139000	3700	5900	257020	15360
1909	4800	1800	340	310	1120	31000	18400	44700	117900	1430	3830	14300	239930	20340
1910	20000	18700	3400	4100	4100	80	29800	53900	330	140	100	1300	136000	9236
1911	2100	130	1500	50	8800	150	47300	1400	50	1500	4500	15000	77480	5270
1912	9600	26700	14800	5300	1500	34000	7000	62400	9800	120	160	4700	177380	12000
1913	4900	4400	5700	3700	3500	5410	1014	131	213	121	183	5417	35475	2356
1914	8120	3780	61	60	176000	165000	116700	50900	572	1050	2560	5200	538072	51723
1915	8670	4340	1680	63700	71300	115000	15200	83600	7380	572	1230	6130	381802	35618
1916	11300	17700	769	982	609	18100	1010	99000	1610	307	6160	6810	1181.87	7508
1917	21500	5460	160	208	2070	2260	2120	188	1050	1160	253	1330	41080	3906
1918	5890	8000	2300	1560	1220	16660	4370	1860	3160	290	684	1700	38894	17030
1919	5260	6930	11200	33600	19800	2590	9900	10200	660	806	10700	10100	121746	76750
1920	10900	2760	996	1170	1160	981	18500	11100	8090	10300	8870	7870	83047	18127
1921	7870	6330	4910	696	1510	648000	190000	138000	8960	990	450	5160	1019666	1017668
1922	8120	10500	4170	1680	566	657	2130	5900	101	125	357	1090	35876	11314
1923	346	337	363	150	21800	71100	76200	267000	81500	181000	35300	26900	706999	521050
1924	59000	51600	43000	38900	4920	26800	648	216	137	212	210	6760	231023	70661
1925	8120	4120	304	141	4610	8030	91700	34700	1330	106	8098	5010	160866	11351
1926	9410	4380	361	2660	3080	11500	6330	1060	71	87	774	2360	46013	21461
1927	5600	1210	1300	868	206	839	117000	161000	3330	220	886	4330	300583	22554
1928	7690	713	290	256	68100	134000	6580	579	1280	375	2560	16800	238623	23079
1929	12000	9160	2050	321	578	2660	2750	127000	1080	537	11800	13300	183666	15181
1930	13300	10500	3950	308	1700	3760	836	17500	11800	32300	6660	16800	119214	39901
1931	4660	6000	2600	4500	2560	2970	202	192	137	127	546	1260	25894	10561
1932	1760	1050	670	167	373	2500	3160	2510	129	119	179	198	12816	8839
1933	280	1160	175	125	70100	18000	5040	41700	21900	815	802	821	162116	159965
1934	353	894	197	179	1130	309	2690	719	25400	123	119	189	32962	30887
1935	272	161	87	107	26500	31760	17380	5720	7140	186	144	768	90697	88087
1936	2550	2540	402	388	76660	7870	54430	92280	616	489	281	716	238562	231646
1937	1120	2170	338	304	481	30500	1260	1050	27600	153	133	699	66878	64215
1938	436	431	189	190	3570	17660	22720	2520	19280	274	837	2670	70777	69960
AVGE.	9160	7190	3650	5360	18510	46170	28630	43640	11710	10130	3680	6150	193660	153480

Underwritten figures are calculated from other records.

Page 5

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

Colo Ex 204
(Sheet 5 of 5)

ARKANSAS RIVER AT COLO.-KANS. STATELINE*

Station located in Sec. 14, T 21 S, R 42 W of 6th P. M.

Drainage Area above Station 25358 sq. mi.

Records by State Engineer and U. S. Geological Survey.

Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

Date 6-3-43

Checked T.H.C.

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	Apr.-Sept.	Oct.-Mar.
08	15884	9140	8757	1131	898	25646	8239	8608	416	144000	22136	17954	560803	44952	515871
09	17954	10884	8521	992	492	27192	28563	38491	23600	10883	9521	17078	213781	189381	24400
10	15000	13000	11314	9640	5103	8975	26614	56507	595	615	595	15414	119402	77464	41938
11	8293	3269	3933	1005	8289	8011	33495	8785	298	3388	20582	21904	107186	47817	59369
12	12800	20837	25264	8216	1047	36659	6394	67299	11406	6143	11940	12755	222720	133981	88739
13	30688	21659	11019	1910	357	9408	17553	1076	833	885	1333	10576	115285	33131	82154
14	16000	8780	3980	2430	172000	189000	106000	54800	1530	3940	5030	13010	576500	527760	48740
15	13500	11200	14100	69600	79300	146000	23500	98600	12900	6090	7140	12000	495730	429700	66030
16	18100	28100	9600	1460	572	7140	781	48200	9100	3850	8690	10050	144343	69953	74390
17	16500	9550	5980	2668	2260	2968	8370	4520	1400	2950	1390	1410	59410	18960	40450
18	6330	4550	4870	2010	1680	5710	7990	2560	6310	2900	5180	8730	58850	26290	32560
19	5250	8030	21200	80900	29100	3060	9220	22900	1280	5570	16200	20200	225910	149460	76450
20	18400	9890	9450	5210	5610	2960	29100	49600	25600	19100	13700	15600	199220	118080	81140
21	14100	11200	12900	3040	1970	585000	161000	114000	5950	5370	4960	11900	961390	900960	60430
22	14300	18600	13500	12700	7870	1290	683	13200	339	315	2770	8120	93667	36082	57605
23	1440	6890	1470	2080	41800	101000	82400	272000	89800	121000	40500	34400	800780	589000	211700
24	70839	58305	40170	49430	13260	31320	4050	2644	2754	3800	4860	11130	292561	103458	189103
25	15190	11440	5040	2668	10090	16900	11403	40150	6660	6640	15530	9770	253978	190468	63510
26	16470	13610	14650	6790	8880	21060	11050	2138	1906	1898	4330	7070	102852	54824	48028
27	11150	7030	6660	3220	2207	2102	128380	256010	17210	5520	6120	12760	452869	143129	49740
28	21220	9840	6820	3760	43140	131890	12360	3910	3450	3870	8520	20630	264190	201510	62680
29	16960	12930	10640	4090	1870	7120	3660	129690	11010	7650	21750	21020	250790	159840	90950
30	15290	18980	9730	3640	12000	6300	3630	26210	15320	56320	16000	22080	205190	67100	138330
31	13730	20170	20620	15120	8780	8110	1882	2302	1165	1598	1979	6380	107220	37948	69271
32	10050	8000	1160	2900	2365	11000	2870	5550	1523	1936	1758	2216	50256	30106	20150
33	5160	5460	3193	2338	28450	12140	10710	60520	32510	2980	1030	5540	172966	146662	26303
34	5760	5370	5500	2198	4760	4310	9220	1042	11390	1788	1202	1556	54096	32920	21176
35	8580	1503	1666	1358	38080	49170	46920	21350	15623	3180	3600	5230	193210	175451	17759
36	5109	7203	3076	1472	111370	29890	54957	113470	1832	1420	5250	7004	345033	312971	32062
37	1110	7108	1668	2279	1164	40840	2915	1166	60320	1594	1829	3828	132336	108883	23453
38	1365	3284	2580	1850	15960	43330	37790	6850	65820	1220	6790	8120	204159	174600	29559
39															
08	11083	12291	9290	10114	21398	50766	31238	50350	16552	23950	8876	11892	260710	180347	80325

* Includes Holly Drain 1934 to 1939 inclusive.

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

ARKANSAS RIVER AT GARDEN CITY, KANS.

Station located in Sec. 19, T 24 S, R 32 W of 6th P. M.

Drainage Area above Station 30,623 Sq. mi.

Records by Kansas State Board of Agric. and U. S. Geological Survey.

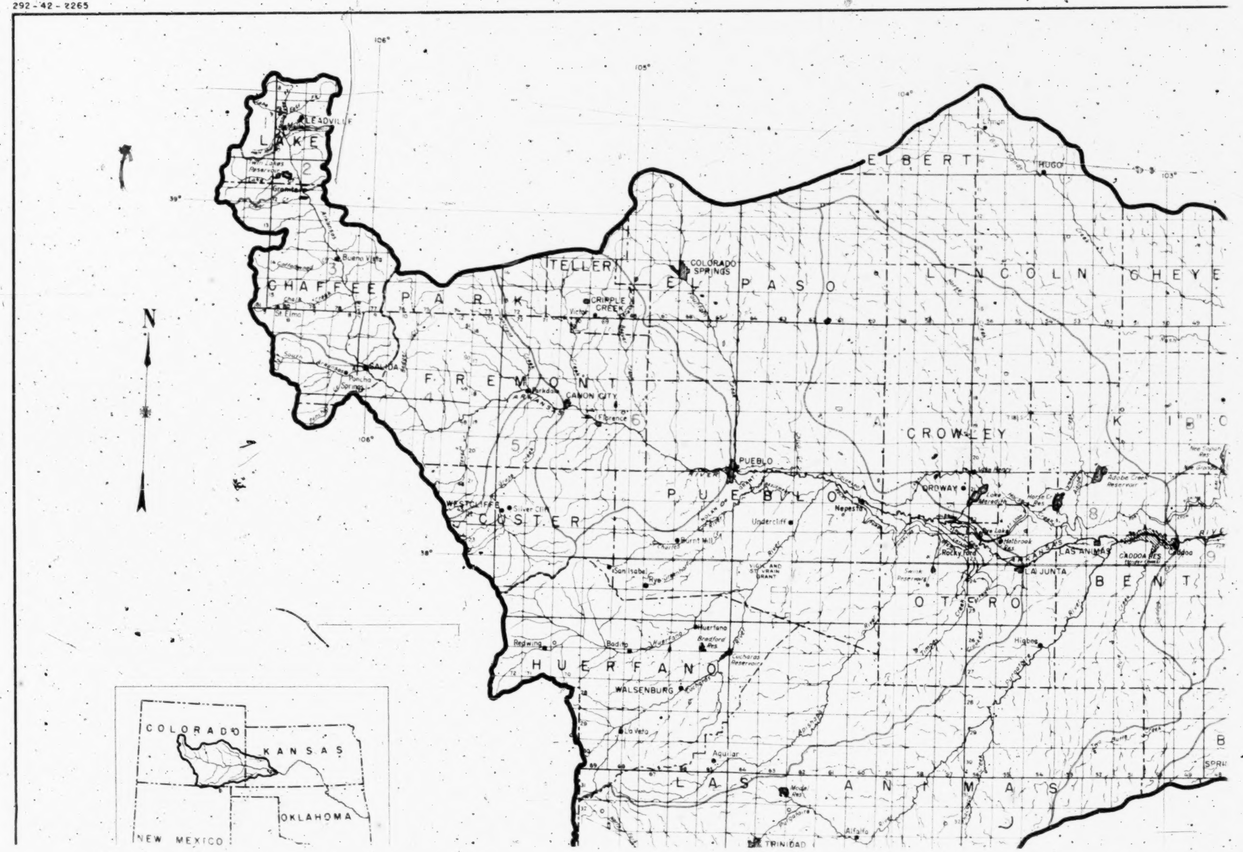
Values in Acre Feet are exclusive of upstream depletions and by-passed quantities.

Date 6-25-43

Checked J.R.E.

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	ANNUAL	Apr.-Sept.	Oct.-Mar.
08	1080	7540	1260	0	0	2950	1140	910	0	364100	18220	14800	430000	5000	425000
09	5220	1090	710	650	0	18810	19540	24230	63770	3170	2780	5030	147000	129000	18000
10	4440	4030	3700	3010	1570	950	0	18470	0	0	200	430	37000	24000	13000
11	1400	1380	1660	340	2960	0	12720	960	0	1430	8430	10500	42000	17000	25000
12	5930	10090	12230	4130	510	18300	3210	33680	7170	2990	5590	6170	110000	67000	43000
13	15700	12610	7150	820	0	3160	4010	10	0	660	700	5400	52000	10000	42000
14	11490	7210	3240	1800	130700	143650	82080	61620	1160	3230	4130	10680	461000	401000	60000
15	12070	10000	14380	56900	64740	119250	19170	80600	10560	5450	6380	10720	410000	351000	59000
16	8530	13210	7650	1010	50	2040	0	11700	2700	1800	4080	4730	52000	17000	35000
17	3650	2130	1320	910	840	1090	870	1670	1620	650	320	930	16000	7000	9000
18	4470	3350	3590	140	20	440	710	0	670	2140	3820	6430	26000	2000	24000
19	1770	2730	7200	5440	18480	1970	5840	14570	2700	1900	2500	6900	92000	95000	26000
20	5830	3160	1420	3490	3730	1980	9490	33190	12120	6150	4380	5010	105000	79000	26000
21	12000	10000	8000	2500	1800	517000	140000	127700	10000	28070	25870	62060	945000	799000	146000
22	10000	6000	1169	10000	3000	988	32	0	0	73	183	595	32000	14000	18000
23	676	878	873	898	82100	71400	47230	214000	95800	185000	53300	41400	768525	540398	228127
24	43500	88200	55500	76200	13800	5560	81	0	40	201	1050	7300	291435	95681	195754
25	6400	7280	1160	893	707	856	56800	31700	171	10	1330	1590	107827	90057	17770
26	6220	1980	478	739	178	102	0	0	0	10	899	589	10525	1019	9506
27	670	721	858	528	54	135	70100	129000	1510	514	1110	1310	206660	201327	5353
28	6520	2650	2020	2160	52200	145009	80900	1710	8	682	3790	19100	256720	221958	34762
29	10000	5310	5100	904	1270	115	0	81800	369	769	8450	13000	131217	81188	46729
30	5550	6410	2150	666	3760	613	0	959	232	34600	9830	22700	91280	6210	85070
31	11500	1500	5540	19800	5440	2130	24	208	40	80	20	122	49844	27062	22002
32	1450	2380	805	324	898	5730	0	0	0	61	119	123	11564	6546	5018
33	123	240	238	54	19700	246	0	15600	13500	54	793	619	51167	45100	2067
34	2420	2600	3780	159	71	0	0	0	1160	111	238	234	11006	1690	9316
35	123	111	0	0	27980	17460	26520	7490	1510	50	159	1280	82683	80960	1723
36	214	1060	89	10	63160	40750	14500	75610	1200	151	649	512	198185	196530	2655
37	305	3730	1400	69	0	11230	0	0	16860	0	179	264	34137	30569	5878
38	71	81	111	424	619	5030	8380	0	17780	119	528	3980	37123	32233	4890
39															
08	6930	7090	5160	7760	11430	36820	17900	31550	9610	20980	5540	8540	171050	116870	54180

Handwritten figures are calculated from other records.


LAKE
CHAFFEE
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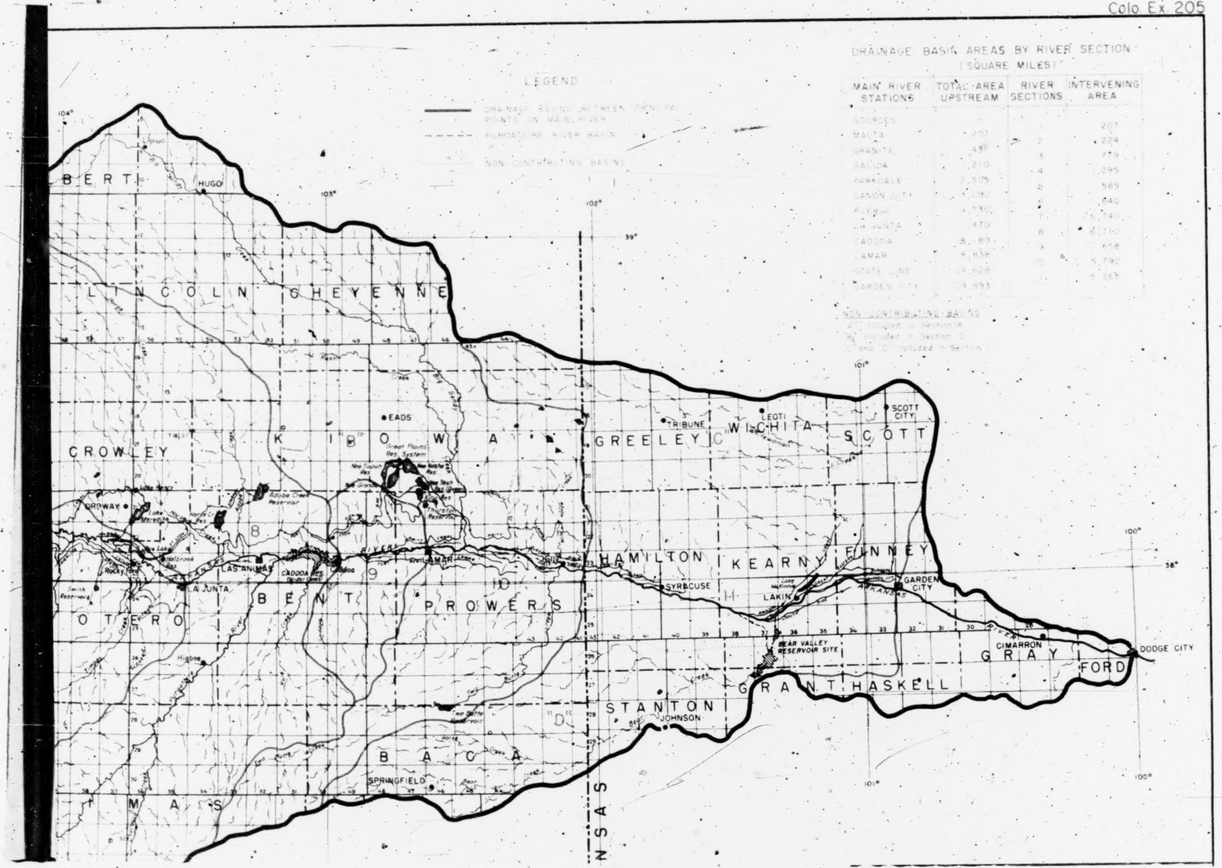
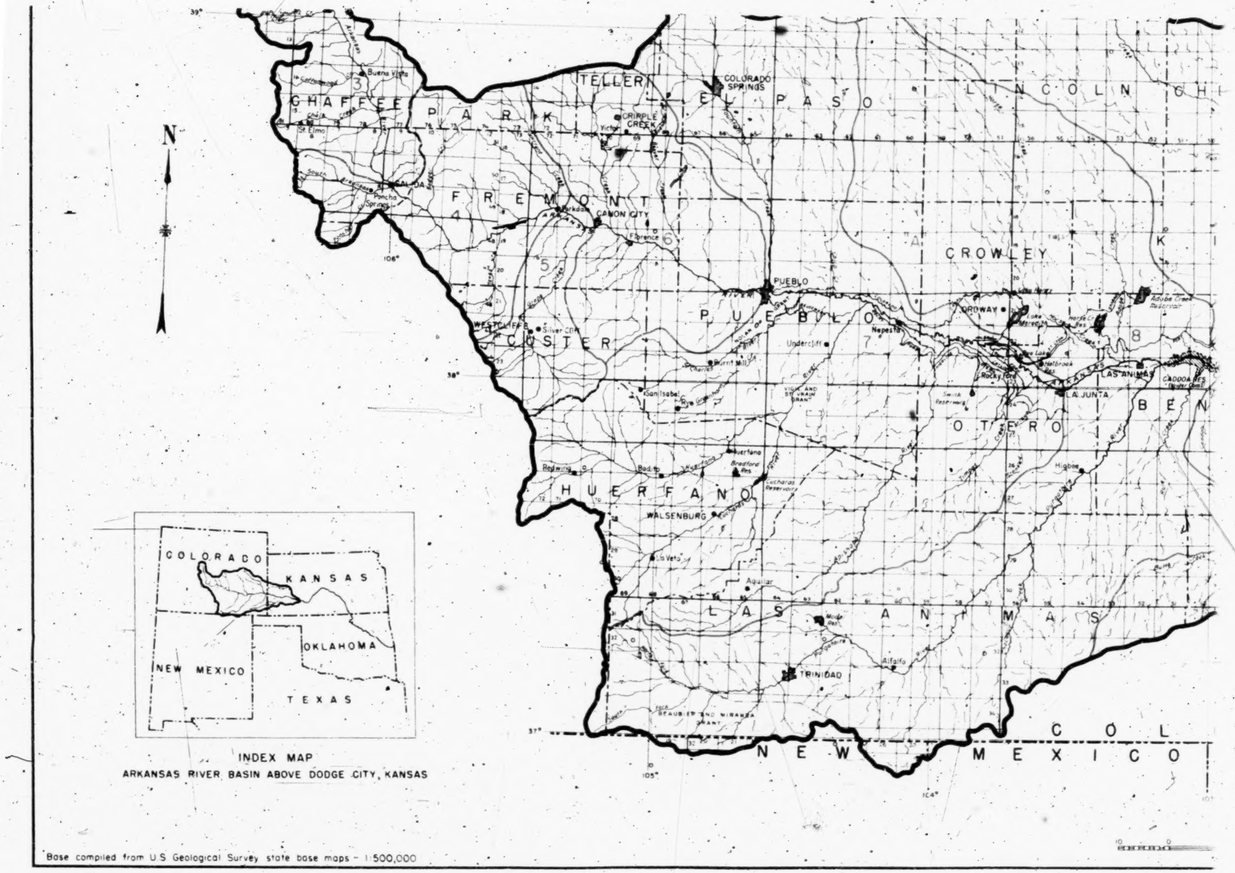
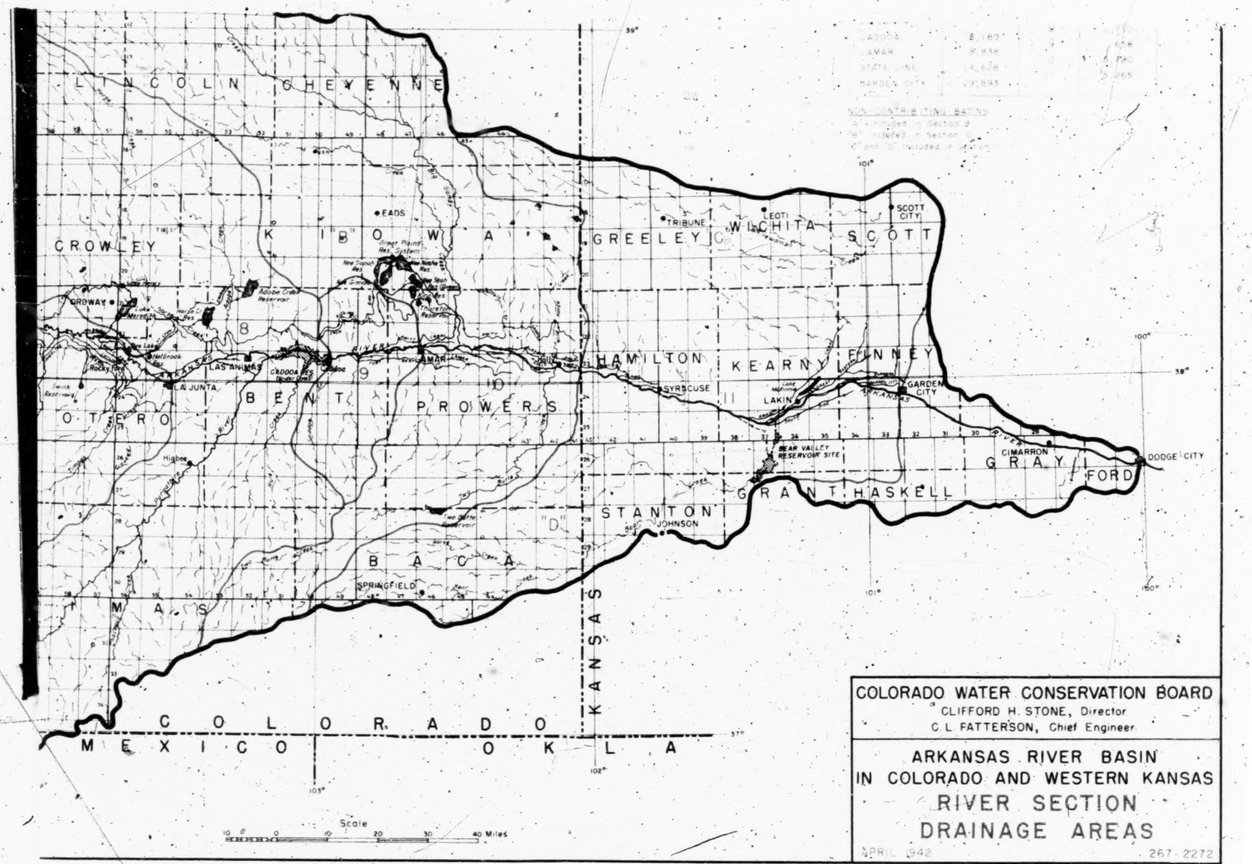
FREMONT
TELLER
EL PASO
ELBERT
LINCOLN
CHEYE
CROWLEY
KIOWA
PUEBLO
OTERO
BENT
COSTER
HUERFANO
LAS ANIMAS
LEADVILLE
COLORADO SPRINGS
CRIPPLE CREEK
CANON CITY
PUEBLO
WESTCLIFFE
CROWLEY
LA JUNTA
CADDOA
LAS ANIMAS
WALSENBURG
TRINIDAD
N
COLORADO
KANSAS
OKLAHOMA
NEW MEXICO


DRAINAGE BASIN AREAS BY RIVER SECTION
(SQUARE MILES)
MAIN RIVER STATIONS
TOTAL AREA UPSTREAM SECTIONS
RIVER INTERVENING AREA
LEGEND
ELBERT
HUGO
LINCOLN
CHEYENNE
CROWLEY
KIOWA
EADS
TRIBUNE
LEGTI
WICHITA
SCOTT CITY
SCOTT
GREELEY
HAMILTON
KEARNY
FINNEY
SYRACUSE
LAKIN
GARDEN CITY
OTERO
BENT
PROWERS
LAS ANIMAS
CADDOA
LA JUNTA
ORDWAY
BEAR VALLEY RESERVOIR SITE
CIMARRON
DODGE CITY
GRAY
FORD
GRANT
HASKELL
STANTON
JOHNSON
BACA
SPRINGFIELD
NSAS





COLORADO WATER CONSERVATION BOARD
CLIFFORD H. STONE, Director
C. L. FATTERSON, Chief Engineer

ARKANSAS RIVER BASIN IN COLORADO AND WESTERN KANSAS
RIVER SECTION
DRAINAGE AREAS

APRIL 1942 267.2272

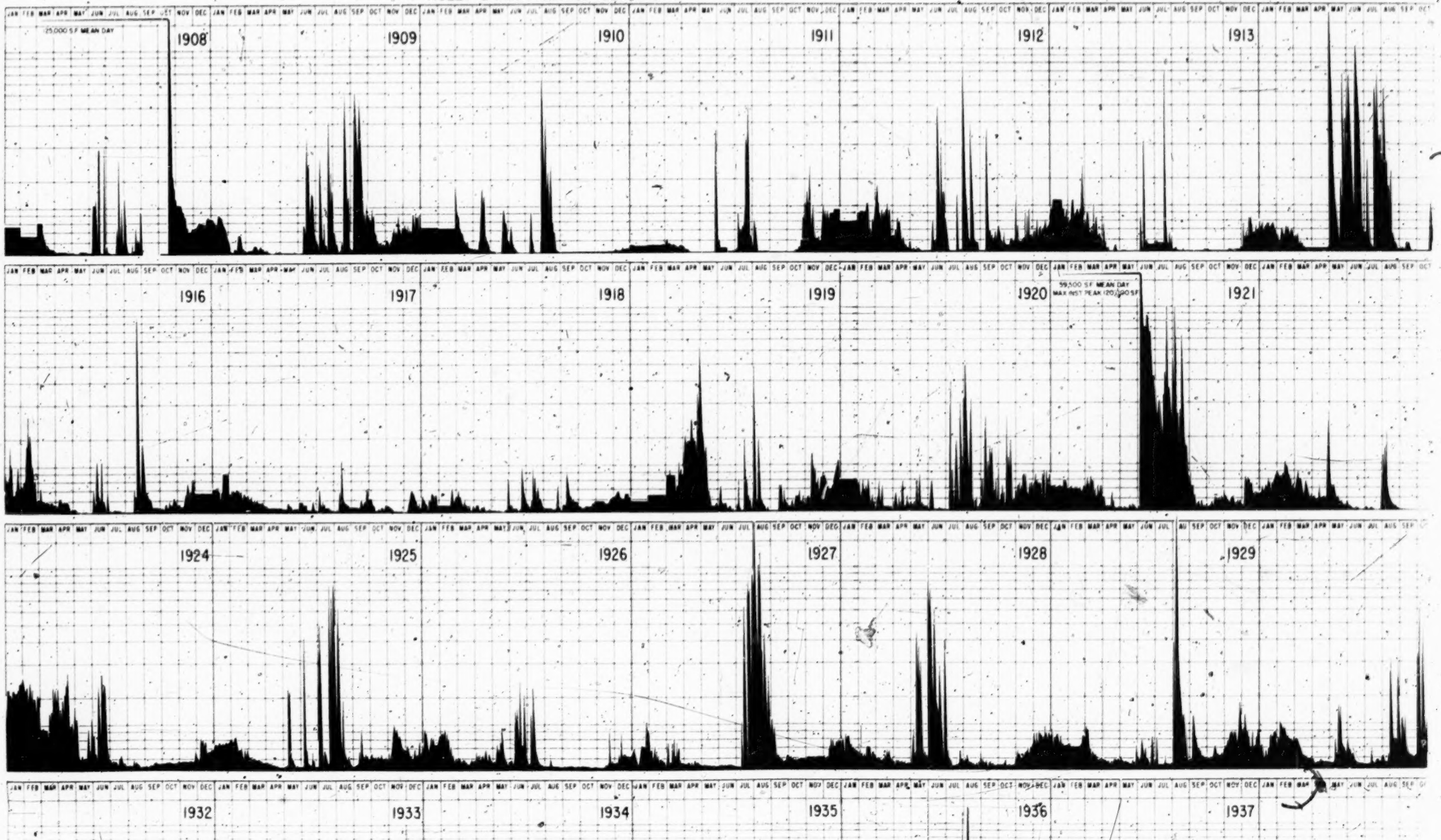
 Drawn by Traced by

COLORADO WATER CONSERVATION BOARD ENGINEERING DEPARTMENT C.C. PATTERSON, CHIEF ENGINEER

HYDROGRAPH OF THE ARKANSAS RIVER AT COLORADO-KANSAS STATE LINE.

MEAN DAILY VALUES IN SECOND FEET.

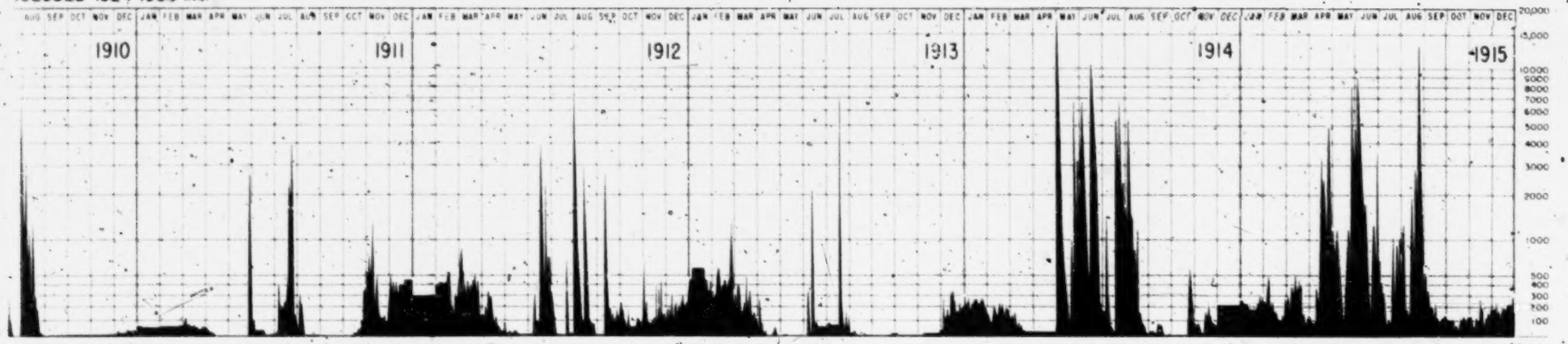
HOLLY DRAIN INCLUDED 1924-1938 Inc.

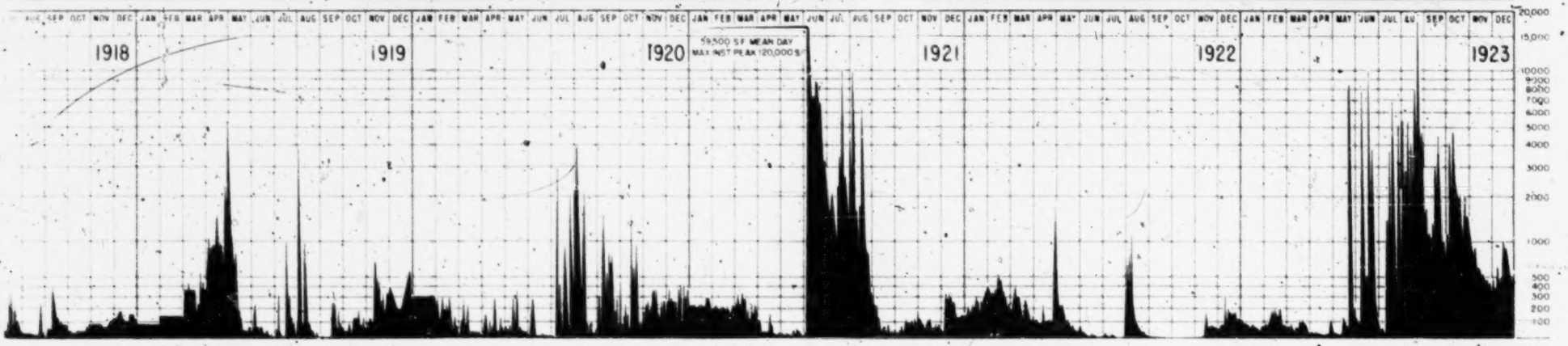


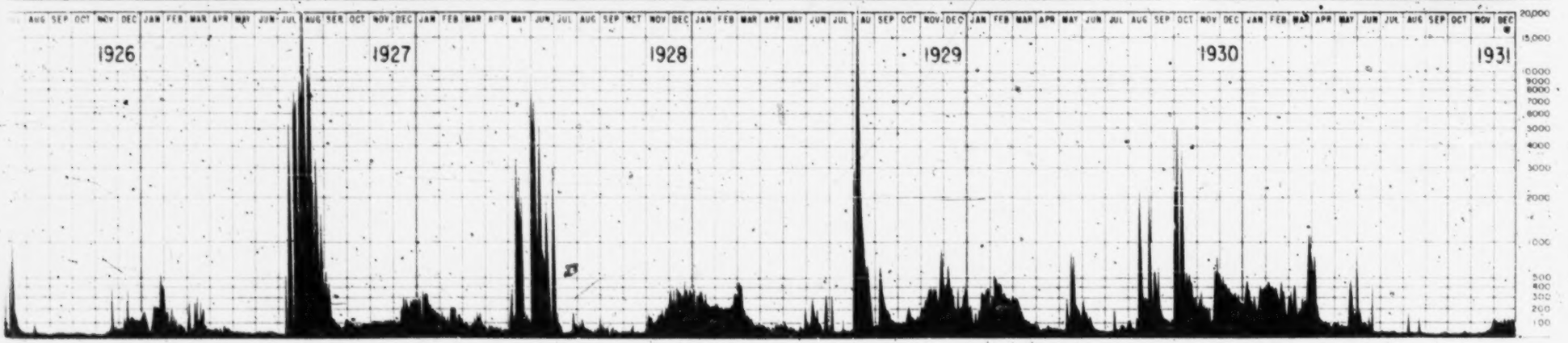
KANSAS STATE LINE.

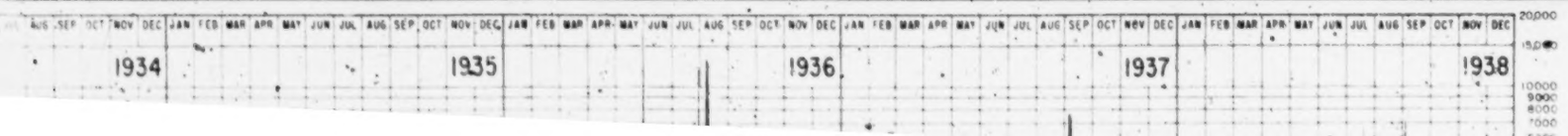
Colo. Ex. 208

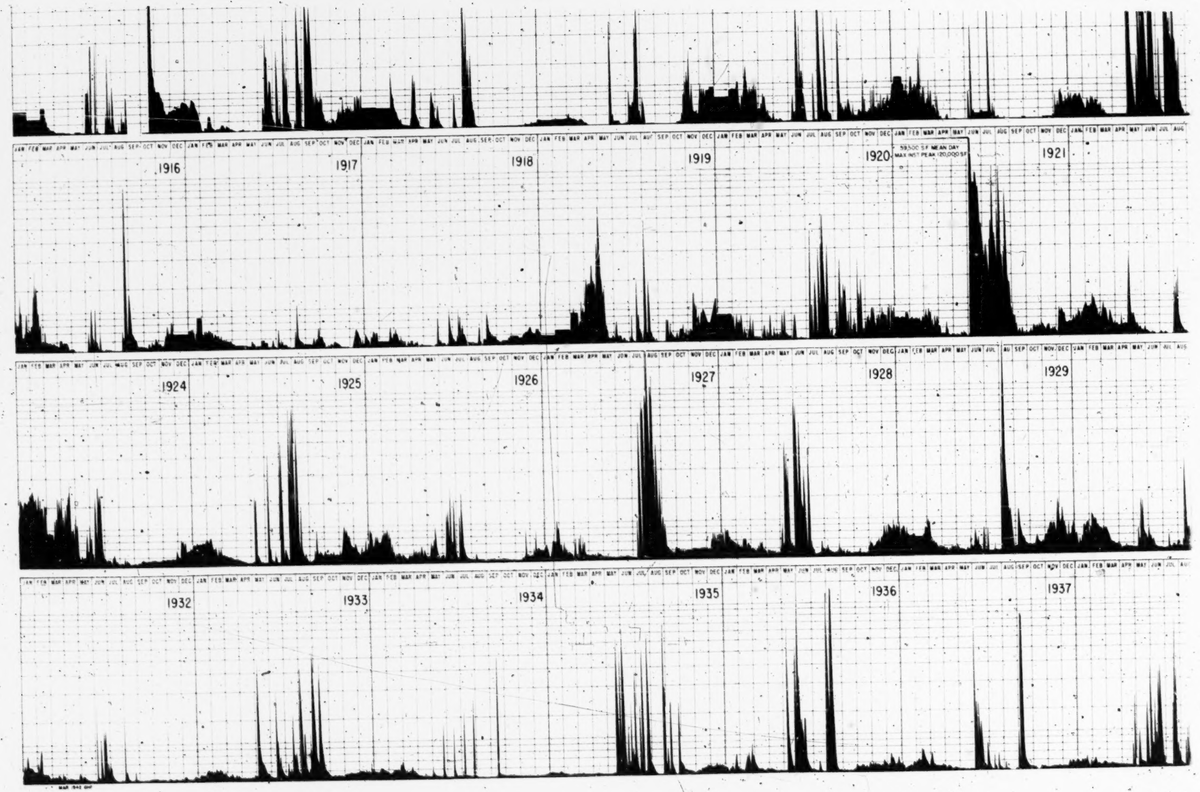
INCLUDED 1924-1936 Inc.







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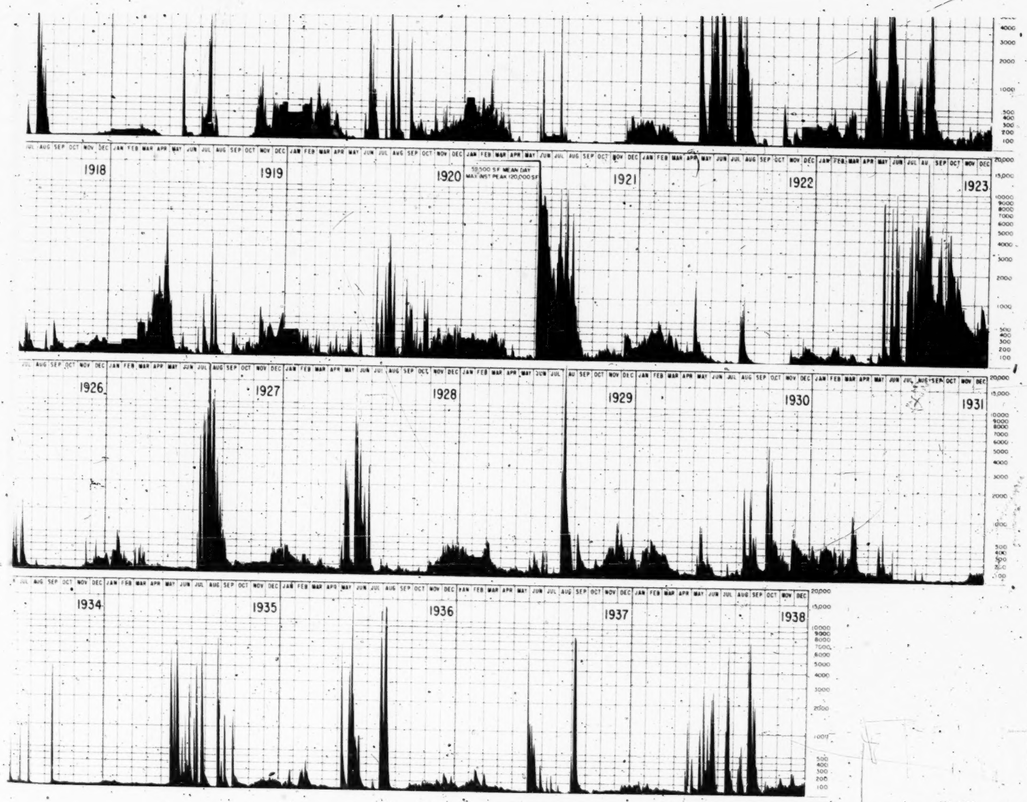
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COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

Colo Ex 209

CADDOA RESERVOIR STUDY

ARKANSAS RIVER AT STATELINE

1909-1958

Values 1000 AF

Date 1962

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	APR-SEP	OCT-MAR
8	15.9	9.1	8.8	1.1	0.9	25.6	8.2	8.6	0.4	142.0	22.1	18.0	560.8	44.9	515.9
9	18.0	3.9	2.5	1.0	0.5	27.2	28.7	38.5	93.6	10.9	9.5	17.3	251.4	189.4	62.0
10	15.0	17.0	11.3	9.6	5.1	3.0	2.6	56.9	0.6	0.6	0.6	4.4	119.4	77.5	41.9
11	3.3	3.3	3.9	1.0	8.3	2.0	33.5	8.7	0.3	3.4	20.6	21.9	107.2	47.8	59.4
12	16.2	20.8	25.3	8.2	1.2	36.7	6.4	67.1	14.4	6.1	11.5	12.8	222.7	134.0	88.7
13	36.7	21.7	14.0	1.9	0.4	9.4	19.6	3.1	0.8	0.9	1.3	10.6	119.3	37.1	82.2
14	14.0	8.8	4.0	2.4	172.0	189.0	106.0	9.8	1.3	3.9	5.0	13.0	576.5	527.8	48.7
15	13.5	11.2	16.1	69.6	79.5	146.0	23.5	98.4	12.9	6.1	7.1	12.0	495.7	429.1	66.6
16	18.1	28.1	5.6	4.2	0.6	7.1	0.8	18.2	9.3	3.3	5.7	10.1	111.2	70.0	71.3
17	16.5	8.6	5.9	2.5	2.3	2.9	2.4	1.5	1.3	1.0	1.4	1.1	58.4	19.0	40.4
18	6.3	1.6	1.9	21.0	1.7	5.7	8.0	2.6	6.3	2.9	5.2	8.7	98.9	26.3	32.6
19	5.3	8.0	21.2	80.9	29.1	3.1	9.2	22.9	1.3	5.6	16.2	20.2	225.9	169.5	76.4
20	15.4	9.9	4.5	5.2	5.6	3.0	29.1	16.6	25.6	19.1	13.7	15.6	199.2	118.1	81.1
21	14.1	11.2	12.9	3.0	2.0	585.0	161.0	116.0	8.0	5.4	5.0	11.9	961.4	901.0	60.4
22	13.8	18.6	13.6	12.7	7.9	1.3	0.7	13.2	0.3	0.3	2.8	8.1	93.7	36.1	57.6
23	4.4	6.9	4.5	2.1	11.8	101.0	82.4	272.0	89.8	121.0	10.5	34.4	800.8	589.1	211.7
24	70.8	58.3	10.2	149.4	13.3	31.3	14.1	2.6	2.8	5.8	4.9	11.1	382.6	103.5	189.1
25	18.2	11.4	5.0	2.7	10.1	16.9	111.0	14.2	6.6	6.5	15.5	9.8	234.0	190.5	43.5
26	16.5	13.6	14.2	6.8	8.9	24.1	11.1	2.1	1.9	1.9	4.3	7.1	102.9	54.8	48.1
27	11.8	7.0	6.8	3.2	2.2	2.1	128.4	266.0	11.2	5.5	6.4	12.8	467.9	403.1	64.8
28	14.2	8.8	6.8	3.8	45.1	131.9	12.4	3.9	3.5	3.9	8.5	20.4	266.2	201.5	64.7
29	17.6	12.9	10.6	14.1	4.3	7.1	3.7	129.7	11.0	7.7	21.8	21.0	250.8	159.8	91.0
30	15.3	19.0	9.7	3.6	12.0	14.3	3.6	25.2	15.3	56.3	16.0	22.1	205.5	67.1	138.4
31	17.8	20.2	20.4	15.1	8.8	8.4	14.9	2.3	1.5	1.6	2.9	6.3	107.2	37.2	69.3
32	10.1	8.0	4.2	2.9	2.4	14.9	2.9	5.6	1.5	1.9	1.8	2.2	58.3	30.1	28.2
33	5.2	5.5	3.1	2.3	28.5	12.1	10.7	60.5	32.5	2.9	4.0	5.5	173.0	116.7	56.3
34	5.8	5.4	5.5	2.2	1.8	1.3	9.2	1.0	11.4	1.8	1.2	1.6	54.1	32.9	21.2
35	2.6	1.5	1.7	1.4	38.1	149.2	16.9	21.3	15.6	5.2	3.6	5.2	283.2	175.5	17.7
36	5.1	7.2	3.1	1.5	111.4	79.9	54.9	113.5	1.8	1.4	5.3	7.0	345.0	313.0	32.0
37	4.3	7.4	4.2	2.2	1.4	14.8	2.9	1.2	60.1	1.6	1.8	1.8	132.5	108.9	23.6
38	4.4	5.3	2.6	1.9	16.0	43.3	37.8	6.9	65.8	1.4	6.8	8.4	201.5	171.6	29.9
39															
40	14.1	12.3	9.3	10.1	21.4	50.8	31.2	50.4	14.6	21.0	8.9	11.9	260.7	180.1	80.3

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

CADDOA RESERVOIR STUDY

ARKANSAS RIVER AT CADDOA

1948-1958

Values 1000 AF

Date 1962

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	APR-SEP	OCT-MAR
48	2.1	0.8	1.1	3.9	2.6	26.9	49.4	53.4	5.3	107.5	8.6	5.1	266.5	134.5	161.8
49	2.9	1.1	5.3	1.8	58.9	43.9	66.1	138.1	13.7	11.5	14.9	11.2	369.1	301.1	68.0
50	18.9	17.8	10.3	25.8	25.8	19.5	14.0	52.4	2.3	1.8	5.9	5.4	251.9	169.8	82.1
51	5.6	3.9	8.0	1.6	17.9	25.1	60.6	7.7	1.7	21.9	13.5	15.1	180.4	114.6	65.8
52	8.3	18.1	11.6	12.0	20.2	66.1	37.1	59.0	19.9	12.6	15.9	7.7	288.5	218.3	71.2
53	5.9	5.7	8.4	10.4	8.8	28.3	13.9	1.6	5.8	9.0	11.8	9.9	119.5	68.8	50.7
54	9.5	9.4	11.6	19.0	18.0	146.1	72.6	7.2	12.5	10.3	8.8	6.5	345.6	283.5	62.1
55	6.8	7.4	10.4	67.9	89.5	134.0	35.3	90.3	14.6	17.0	12.9	7.3	493.4	431.6	61.8
56	12.3	16.6	7.3	17.4	20.7	28.6	22.4	70.4	6.5	11.3	11.0	8.4	252.9	166.0	86.9
57	14.2	7.0	5.5	7.7	28.2	28.0	35.8	19.9	12.1	9.5	12.7	6.8	188.7	132.5	56.2
58	6.2	5.9	9.5	14.1	9.6	31.6	30.4	9.7	15.6	11.2	14.3	9.6	168.4	111.0	57.4
59	3.7	5.2	9.0	26.3	29.5	23.2	31.9	21.4	15.6	9.8	11.0	7.7	190.3	147.9	42.4
60	7.4	5.2	6.4	5.6	19.7	29.1	36.7	23.2	17.7	21.2	8.6	7.5	191.3	132.0	59.3
61	6.9	5.6	5.7	11.6	25.0	666.3	183.5	136.5	11.7	15.2	11.6	6.6	1085.6	1034.6	51.0
62	8.6	9.3	6.8	8.7	13.0	26.2	25.9	11.8	2.4	2.0	10.8	8.5	136.0	86.0	14.0
63	6.3	6.0	6.4	2.5	27.1	93.8	103.3	288.4	30.4	11.0	12.8	25.5	805.1	613.5	191.6
64	58.2	14.1	29.3	39.4	29.2	52.3	19.1	14.5	0.6	4.1	6.8	6.5	293.1	145.1	148.0
65	5.4	4.7	5.6	1.1	13.5	22.3	106.3	12.5	9.2	12.4	11.5	8.0	214.5	134.9	50.6
66	7.4	6.2	10.2	21.0	28.7	53.1	28.4	7.6	1.0	1.4	12.9	6.9	167.8	122.8	45.0
67	5.4	4.7	5.6	30.1	13.6	133.3	168.5	29.7	21.7	18.4	7.5	7.5	435.0	371.5	63.5
68	5.9	6.2	4.5	4.7	71.5	136.5	54.8	16.0	3.6	6.6	12.2	13.6	313.9	263.9	50.0
69	9.2	7.8	6.9	4.0	12.6	53.6	32.1	157.7	17.8	17.4	18.4	11.1	322.6	257.8	64.8
70	5.2	8.0	6.5	4.8	15.7	28.3	18.8	54.2	22.7	16.5	11.8	13.4	235.9	144.5	89.4
71	2.8	8.3	9.8	12.8	24.9	18.2	3.0	2.7	2.5	1.5	2.5	4.3	95.3	64.1	31.2
72	2.3	4.6	3.7	3.2	12.1	27.6	29.5	21.2	5.3	3.4	5.8	2.1	119.3	96.9	22.4
73	2.8	5.5	2.4	3.8	81.4	52.4	26.5	18.6	30.9	2.7	4.3	9.8	271.1	213.6	27.5
74	7.1	5.9	4.2	2.3	13.1	5.0	8.6	3.4	26.9	1.4	1.4	2.0	81.5	59.3	22.0
75	2.7	1.8	1.6	1.2	51.8	57.7	14.9	19.8	22.4	8.1	9.5	7.7	228.5	196.9	31.4
76	5.2	3.1	2.0	3.3	62.0	20.6	68.9	121.8	11.4	13.5	12.0	7.5	357.3	288.0	69.5
77	4.0	4.9	4.7	7.2	22.1	56.2	14.5	8.5	45.9	2.5	3.3	7.5	181.3	154.4	26.9
78	8.6	6.2	3.4	5.1	24.6	38.2	18.9	12.8	50.0	15.2	15.7	14.7	213.5	179.7	61.8
79															
80	5.2	3.3	7.2	11.5	31.6	66.9	18.6	54.1	20.4	17.7	11.1	9.1	295.7	233.1	62.6

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

Colo Ex 210

CADDOA RESERVOIR STUDY

DIVERSIONS - CADDOA TO STATELINE

1908-1958

Values 1000 AF

Date 1962

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	APR-SEP RC	U
1908	0.5	3.2	4.6	5.0	4.6	24.0	31.5	29.8	12.1	9.5	6.7	5.2	136.7	107.4	29.3
09	0.5	2.5	1.8	5.5	6.5	14.2	57.3	31.6	23.9	14.1	9.7	2.3	177.1	146.6	30.5
1910	0.6	0.5	3.1	20.7	30.9	24.1	14.3	11.8	5.4	5.9	9.2	7.0	142.5	110.1	32.4
11	3.8	4.5	9.3	4.4	12.5	28.3	32.6	8.6	4.4	27.3	11.1	3.0	145.6	86.8	58.8
12	0	0	0.8	12.3	21.6	35.6	31.6	19.0	15.2	12.3	4.7	5.0	178.1	115.1	63.0
13	0	0	5.1	11.2	8.9	36.3	19.1	5.2	3.8	13.1	4.1	7.1	109.8	78.3	31.5
14	5.5	8.7	13.3	22.5	19.0	25.3	30.0	24.0	12.6	15.5	14.0	6.4	198.4	135.6	62.8
15	0	6.7	7.1	19.8	14.7	18.7	24.6	25.2	13.5	23.2	17.0	3.8	174.2	124.0	50.2
16	0.7	3.0	9.5	17.2	25.7	25.5	25.9	22.5	11.8	14.7	9.5	3.6	169.5	129.1	40.4
17	0.9	3.1	8.6	9.6	25.7	35.9	40.1	24.7	16.2	13.8	15.9	8.4	203.7	154.3	49.4
18	2.7	0.9	10.6	19.0	11.9	34.8	30.5	11.6	10.5	13.5	13.5	6.3	172.8	127.1	45.7
19	0	0	.0	1.3	16.3	28.6	27.7	18.1	12.8	8.2	2.9	0.9	117.4	105.0	12.4
1920	1.3	4.9	6.9	9.4	23.2	32.4	31.6	15.5	13.1	12.6	5.6	5.6	171.2	151.2	19.0
21	0.8	1.7	4.1	11.0	30.8	12.6	13.5	12.9	11.2	18.0	13.7	2.8	136.1	97.2	38.9
22	0.8	0.2	5.4	10.5	14.7	27.5	29.7	17.1	4.7	5.9	12.9	8.1	138.4	114.1	24.3
23	7.8	7.4	8.2	6.4	15.5	32.8	35.8	14.4	24.1	7.7	4.2	0.9	165.3	129.1	36.2
24	0.5	0	0.5	8.2	31.8	30.8	23.1	7.4	3.7	7.1	9.5	2.9	125.6	102.1	23.5
25	0.0	1.9	9.0	5.1	14.1	22.1	34.5	19.2	12.8	15.4	9.3	6.4	149.3	107.7	41.6
26	0.2	1.1	15.9	29.0	18.7	29.3	28.6	12.8	4.6	6.2	17.3	6.2	155.4	135.9	19.5
27	1.4	1.9	7.8	11.1	13.2	34.1	25.0	13.4	18.8	25.1	22.7	3.6	181.6	111.8	69.8
28	0.9	6.4	8.2	11.2	25.7	20.4	35.3	21.8	9.1	11.6	13.5	0.2	161.3	126.5	34.8
29	0	0	6.9	9.5	15.0	25.8	30.6	29.8	24.1	23.1	5.5	1.2	175.2	138.6	36.6
1930	0.6	0.6	9.0	12.5	19.7	31.0	24.5	34.4	18.9	10.1	7.0	0.5	165.6	136.0	29.6
31	0	2.9	6.5	10.4	28.3	32.0	7.0	5.3	4.9	5.7	5.4	4.0	102.3	77.8	24.5
32	1.2	5.2	7.3	6.7	14.0	29.6	23.6	22.0	6.7	7.0	9.4	3.2	139.9	106.6	33.3
33	3.0	2.1	5.8	7.2	27.5	40.1	30.8	25.9	17.0	8.7	8.1	4.9	180.7	128.5	52.2
34	8.9	8.0	9.2	7.1	16.5	8.5	9.5	5.6	11.9	4.8	3.8	4.5	98.5	54.3	44.2
35	4.9	4.1	4.6	5.8	22.3	41.1	33.4	18.3	19.4	11.6	13.2	7.3	183.5	138.4	45.1
36	5.7	1.2	3.5	4.2	31.8	34.4	23.0	36.2	15.0	23.4	15.1	3.0	204.7	128.9	75.8
37	1.2	4.4	2.5	9.2	20.5	33.8	15.8	6.1	23.1	7.2	5.8	8.9	118.5	108.9	9.6
38	8.9	8.3	6.6	2.1	27.1	32.0	36.0	15.5	27.9	17.1	13.5	10.7	206.1	141.7	64.4
AVGS.	2.2	3.4	6.9	10.7	20.1	28.1	26.8	18.1	13.7	13.0	10.9	4.9	158.9	117.8	41.1

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

CADDOA RESERVOIR STUDY

ACCRETIONS - CADDOA TO STATELINE

1908-1958

Values 1000 AF

Date 1962

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	APR-SEP RC	U
1908	-7.7	3.5	6.3	2.2	2.9	22.7	-2.6	-15.0	7.2	36.0	20.6	14.0	101.2	17.5	83.7
09	13.6	3.5	2.8	1.2	2.0	17.3	20.1	4.0	-11.6	11.3	7.7	4.7	78.5	31.9	46.6
1910	-3.3	-1.3	10.1	4.5	10.2	7.5	-27.1	19.0	3.6	2.7	3.8	3.1	30.0	17.7	12.3
11	2.7	3.9	5.8	3.8	2.8	1.3	5.5	3.6	3.0	8.8	10.4	12.8	72.4	20.0	52.4
12	3.9	2.7	14.5	8.5	2.4	10.1	0.8	27.3	9.7	5.9	12.4	10.0	108.3	58.5	49.8
13	24.8	19.0	10.7	2.7	0.4	11.6	24.7	4.4	-1.2	5.0	9.7	7.8	119.6	68.7	50.9
14	9.8	8.0	7.7	10.1	32.0	30.3	-8.1	6.2	6.9	7.9	8.8	10.6	129.3	77.4	51.9
15	6.7	10.5	12.8	21.5	4.5	30.7	12.6	33.3	11.8	12.3	11.3	8.5	176.6	118.9	57.7
16	6.6	11.9	7.8	4.8	5.6	14.1	4.3	9.3	11.4	7.3	7.0	5.2	81.0	32.6	48.4
17	8.7	7.6	9.0	4.3	-0.2	10.0	6.6	8.3	8.5	7.3	4.5	5.7	71.4	32.5	38.9
18	2.2	-0.5	6.6	7.8	4.0	8.9	8.1	4.2	7.2	5.2	4.4	3.4	65.2	40.4	24.8
19	1.6	2.8	12.2	55.9	15.9	8.5	5.0	13.8	4.5	8.4	8.1	13.4	153.0	100.0	53.0
1920	12.3	2.6	4.9	8.9	9.8	6.2	21.0	11.9	27.0	12.5	10.7	11.1	179.1	118.0	61.1
21	8.0	7.5	11.5	6.0	7.9	-8.7	-9.0	20.4	5.5	8.2	7.0	8.5	12.4	-38.2	50.6
22	6.5	10.2	12.1	11.5	9.5	2.1	4.5	15.7	1.6	4.2	4.9	7.7	95.9	50.6	45.3
23	5.3	8.3	6.3	6.0	10.2	10.0	14.9	-2.0	15.5	14.7	11.9	9.8	161.0	104.6	56.4
24	16.2	12.2	11.2	18.2	15.9	9.8	8.9	5.5	6.1	6.9	7.6	7.5	125.1	63.5	61.6
25	9.8	8.0	8.5	6.7	10.6	16.7	12.2	16.9	10.3	9.5	10.4	7.8	157.9	103.1	54.8
26	9.2	11.6	14.9	11.8	11.8	20.2	11.2	7.3	5.6	6.7	8.8	6.4	120.5	68.9	51.6
27	7.6	7.8	8.0	9.4	3.7	6.1	20.1	10.9	9.4	8.9	10.8	8.8	201.6	114.4	87.2
28	9.2	9.0	10.5	10.2	-1.5	18.8	15.9	9.7	7.9	8.8	8.9	7.1	111.6	58.2	53.4
29	7.8	5.1	10.6	9.4	6.6	3.4	2.2	1.7	17.3	13.3	11.9	11.1	103.4	48.6	54.8
1930	6.7	11.5	12.3	9.4	16.0	9.8	6.3	6.4	10.6	26.0	11.1	9.6	135.1	58.5	76.6
31	14.0	11.8	17.1	12.7	12.2	12.2	5.8	4.9	5.8	5.8	4.9	6.0	114.1	54.4	59.7
32	8.4	8.0	7.7	6.4	4.3	16.9	1.0	8.4	4.9	5.8	5.3	3.3	78.7	35.8	42.9
33	6.3	2.4	8.6	5.7	-0.4	4.0	15.0	37.2	18.6	8.8	8.2	8.6	91.5	54.9	36.6
34	7.6	7.9	10.9	7.0	8.2	7.8	9.1	1.2	-3.6	5.2	3.6	4.0	68.3	29.8	38.5
35	4.2	3.7	4.0	4.0	9.7	32.6	36.3	22.8	12.7	8.5	7.3	4.9	148.3	110.9	37.4
36	3.6	5.8	4.6	2.8	31.1	25.7	9.0	28.0	5.4	8.3	6.3	8.6	190.5	134.9	55.6
37	3.9	6.9	7.5	4.8	-0.2	18.6	4.2	-1.3	37.5	4.1	4.3	5.2	95.5	63.4	32.1
38	4.6	5.4	5.1	6.9	18.6	37.0	20.9	9.5	43.8	6.3	6.5	4.4	169.1	136.7	32.4
AVGS.	6.9	7.3	9.0	9.3	9.9	12.2	9.4	11.6	9.8	19.2	8.6	7.7	123.9	65.2	58.7

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

Colo Ex. 211

CADDOA RESERVOIR STUDY

DIVERTIBLE WATER IN ARKANSAS RIVER

AT COLO.-KANS. STATELINE

1909-1938

Values 1000 AF

Date 1942

YR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT	OCT.	NOV.	DEC.	ANNUAL	APR-SEP	OCT-MAR
09	15.9	9.1	8.8	3.1	0.9	25.6	8.2	8.6	0.4	35.9	22.1	18.0	156.7	46.9	109.8
10	18.6	3.9	2.5	1.0	0.5	26.4	25.9	61.7	10.9	9.5	17.3	20.0	201.0	138.9	62.1
11	16.0	13.0	11.3	9.6	5.1	3.0	2.6	44.5	0.6	0.6	0.6	1.4	107.4	65.5	41.9
12	3.3	3.3	3.9	1.0	8.3	2.0	28.3	2.7	0.3	3.4	20.6	21.9	102.0	62.6	39.4
13	32.2	20.8	25.3	8.2	1.0	30.7	6.4	36.3	13.1	6.1	11.5	12.8	186.4	95.7	88.7
14	30.7	21.7	14.0	1.9	0.4	9.1	3.6	1.1	0.8	0.9	1.3	10.6	105.0	22.9	82.1
15	14.0	8.8	4.0	2.4	2.9	96.1	56.9	45.3	1.5	3.9	5.0	13.0	315.9	267.2	48.7
16	13.5	11.2	10.1	5.5	5.0	71.9	23.5	62.4	12.9	6.1	7.1	12.0	345.2	279.2	66.0
17	18.1	28.1	5.6	1.2	0.6	7.1	0.8	23.4	9.1	3.8	8.7	10.0	119.5	46.1	73.4
18	16.5	9.6	5.9	2.5	2.3	2.9	2.4	4.5	4.4	3.0	4.4	4.3	59.7	19.0	40.7
19	6.3	4.5	4.9	2.0	1.7	5.7	8.9	9.6	0.3	2.9	5.2	8.7	58.9	26.3	32.6
20	5.2	3.0	21.2	67.2	28.6	3.1	9.2	18.6	4.3	5.6	16.2	30.2	207.4	131.0	76.4
21	18.4	9.9	4.4	5.2	5.6	3.0	27.2	43.1	25.6	19.1	13.7	15.6	190.8	109.7	81.1
22	11.1	11.2	12.9	3.0	2.0	105.3	110.2	84.0	6.0	5.4	5.0	11.3	366.9	308.5	60.4
23	11.5	12.6	13.5	12.7	7.9	4.5	0.7	13.2	0.3	0.3	2.8	8.1	93.7	36.1	57.6
24	6.4	6.9	4.5	2.1	11.5	53.2	53.1	110.6	77.6	37.1	10.5	5.4	368.1	318.1	188.0
25	28.8	38.3	14.2	14.4	13.3	3.3	4.0	2.6	2.8	3.8	4.9	11.1	292.6	103.5	189.1
26	15.2	11.4	5.0	2.7	10.1	12.6	57.2	30.2	6.6	6.5	15.5	9.8	183.0	119.5	63.5
27	16.5	13.6	4.6	4.8	8.9	24.1	11.0	2.1	4.9	4.9	4.3	7.1	102.8	54.8	48.0
28	11.2	7.0	6.9	3.2	2.2	2.1	52.3	89.1	11.2	5.5	6.4	12.8	209.9	160.2	49.7
29	8.2	8.8	6.8	3.8	37.5	73.2	12.1	3.9	3.4	3.9	8.5	20.4	196.6	133.9	62.7
30	17.6	12.9	10.6	4.3	4.3	7.1	3.7	54.4	11.0	7.6	21.8	21.0	175.5	84.5	91.0
31	15.3	19.0	9.7	3.6	12.0	6.3	3.6	26.1	15.3	44.1	16.0	22.1	193.2	67.0	126.2
32	18.8	20.2	20.4	15.1	8.8	8.4	1.9	2.3	1.5	1.6	2.0	6.3	107.2	37.9	69.3
33	10.0	8.8	4.2	2.9	2.4	4.9	2.9	5.6	1.5	1.9	1.8	2.2	58.3	30.1	28.2
34	5.8	5.5	3.2	2.3	20.9	11.9	10.7	16.1	28.9	2.9	4.0	5.5	117.2	120.9	26.3
35	5.8	5.4	5.9	2.2	4.8	4.3	9.2	4.0	7.6	4.8	4.2	4.6	58.5	29.1	21.2
36	2.6	1.5	1.7	1.4	26.8	36.5	31.8	16.4	15.6	3.2	3.6	5.2	146.2	128.5	17.7
37	4.1	7.2	3.1	1.5	43.0	29.7	13.5	48.6	4.8	4.4	5.2	7.0	270.1	138.1	32.0
38	4.1	3.7	2.7	2.2	4.1	33.0	2.9	1.2	26.4	1.6	1.8	3.8	90.6	67.2	23.4
39	4.4	3.3	2.6	4.8	13.8	41.9	28.0	6.8	45.8	4.4	6.8	8.4	171.2	141.3	29.9
AVG.	11.1	12.3	9.3	5.2	13.6	21.9	20.0	27.8	13.1	9.7	8.9	11.8	174.7	108.6	66.1

Includes diversions of Holly Drain at Stateline.

COLORADO WATER CONSERVATION BOARD — ENGINEERING DEPARTMENT

CADDOA RESERVOIR STUDY

UNDIVERTIBLE WATER IN ARKANSAS RIVER

AT COLO.-KANS. STATELINE

1908-1938

Values 1000 AF

Date 1942

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT	OCT.	NOV.	DEC.	ANNUAL	APR-SEP	OCT-MAR
1908	0	0	0	0	0	0	0	0	0	106.1	0	0	106.1	0	106.1
09	0	0	0	0	0	0.7	2.3	12.6	31.9	0	0	0	47.5	47.5	0
1910	0	0	0	0	0	0	0	12.0	0	0	0	0	12.0	12.0	0
11	0	0	0	0	0	0	5.2	0	0	0	0	0	5.2	5.2	0
12	0	0	0	0	0	0.0	0	31.0	1.3	0	0	0	38.3	38.3	0
13	0	0	0	0	0	0.3	10.0	0	0	0	0	0	10.3	10.3	0
14	0	0	0	0	97.1	100.9	53.1	9.5	0	0	0	0	260.6	260.6	0
15	0	0	0	15.1	25.3	71.1	0	36.0	0	0	0	0	150.5	150.5	0
16	0	0	0	0	0	0	0	21.8	0	0	0	0	21.8	21.8	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	13.7	0.5	0	0	1.3	0	0	0	0	18.5	18.5	0
1920	0	0	0	0	0	0	1.9	6.5	0	0	0	0	8.4	8.4	0
21	0	0	0	0	0	481.7	60.8	60.0	0	0	0	0	592.5	592.5	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	24.3	47.8	29.3	161.4	12.2	23.7	0	0	298.7	275.0	23.7
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	4.3	56.8	9.9	0	0	0	0	71.0	71.0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	76.0	366.9	0	0	0	0	212.9	212.9	0
28	0	0	0	0	5.6	61.7	0.3	0	0	0	0	0	67.6	67.6	0
29	0	0	0	0	0	0	0	75.3	0	0	0	0	75.3	75.3	0
1930	0	0	0	0	0	0	0	0.1	0	12.2	0	0	12.3	0.1	12.2
31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	0	0	0	7.6	0.2	0	11.4	3.6	0	0	0	25.8	25.8	0
34	0	0	0	0	0	0	0	0	3.8	0	0	0	3.8	3.8	0
35	0	0	0	0	11.3	12.7	15.1	7.9	0	0	0	0	47.0	47.0	0
36	0	0	0	0	68.6	0.2	11.4	61.9	0	0	0	0	171.2	171.2	0
37	0	0	0	0	0	7.8	0	0	33.9	0	0	0	41.7	41.7	0
38	0	0	0	0	2.1	1.4	9.8	0	20.0	0	0	0	33.3	33.3	0
AVG.	0	0	0	0.9	7.8	25.9	11.3	22.5	3.4	11.3	0	0	86.1	71.8	14.3

COLORADO WATER CONSERVATION BOARD -- ENGINEERING DEPARTMENT

Colo Ex 212

CADDOA RESERVOIR STUDY

WATER USED BY KANSAS - STATELINE TO GARDEN CITY

1908-1938

Values 1000 AF

Date 1942

YEAR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT	OCT	NOV	DEC.	ANNUAL	APR-SEP OCT-MAR
1908	2.8	1.6	1.5	1.1	0.7	22.7	7.1	7.7	0.4	77.9*	3.9	3.2	130.8	52.9 78.2
09	12.7	2.8	1.8	0.3	0.5	8.4	9.1	12.3	29.8	7.7	6.7	12.2	101.1	64.4 36.7
1910	0.4	0.4	1.6	0.6	3.5	2.0	2.6	38.0	0.6	0.6	0.4	1.0	51.3	53.3 -2.0
11	1.9	1.9	2.3	0.6	5.3	2.0	20.8	1.8	0.3	2.0	12.0	1.4	65.2	30.7 34.5
12	6.3	10.7	13.0	1.1	0.3	18.4	3.1	35.0	7.2	3.2	6.0	6.2	112.7	72.9 39.8
13	15.0	12.0	6.9	1.1	0.4	6.2	13.5	1.1	0.8	0.4	0.6	9.2	65.3	23.1 42.2
14	2.5	1.6	0.7	0.6	11.3	45.4	25.9	13.2	0.4	0.7	0.9	2.3	135.5	126.8 8.7
15	1.4	1.2	1.7	12.7	11.6	20.8	4.3	18.0	2.4	0.5	0.8	1.3	85.7	78.7 7.0
16	9.6	11.9	3.0	1.4	0.5	5.1	0.5	36.5	6.9	2.0	1.6	5.3	93.5	52.9 39.6
17	12.8	7.4	1.4	1.4	1.4	1.4	1.5	2.8	2.8	2.4	1.1	1.2	43.4	12.6 30.8
18	1.7	1.2	1.3	1.8	1.7	5.3	7.3	2.6	3.6	0.8	1.4	2.1	32.9	21.2 11.7
19	3.6	5.3	11.6	23.3	10.6	1.19	3.4	8.3	1.8	3.7	10.7	17.1	104.9	73.4 31.5
1920	12.6	6.7	3.0	1.7	1.9	1.0	9.6	16.4	8.5	13.0	9.3	10.5	91.2	57.1 34.1
21	2.1	1.6	14.9	0.5	0.2	68.0	21.0	10.3	-22.7	-0.9	-56.2	1.4	100.6	160.6 -59.8
22	1.3	12.6	12.8	2.7	1.9	0.3	0.7	13.2	0.3	0.2	2.6	7.5	61.7	28.1 33.6
23	3.5	2.0	3.2	1.2	19.7	23.6	35.2	29.0	-4.0	-6.0	-12.8	- 7.0	108.8	108.8 0.0
24	27.2	-9.7	-10.2	-22.8	- 0.3	25.8	1.0	2.6	2.7	3.6	5.8	1.8	1.1	7.8 - 6.7
25	8.5	4.2	3.9	1.8	9.4	11.6	57.7	8.1	1.9	1.9	1.0	6.5	126.2	98.3 27.9
26	10.1	11.6	4.2	1.1	8.7	21.0	11.0	2.1	1.9	1.9	1.0	6.5	98.3	55.8 42.5
27	10.5	6.3	5.8	2.7	2.6	2.0	38.3	122.0	4.7	5.2	5.1	11.1	216.2	201.8 14.4
28	7.7	6.2	4.8	1.6	- 9.1	-10.1	- 8.5	2.2	3.4	3.2	4.7	1.3	7.5	-20.4 27.9
29	7.0	7.5	1.5	1.2	3.0	7.0	3.7	17.9	10.6	6.9	13.6	8.0	110.6	75.4 35.2
1930	9.7	12.5	7.4	3.2	8.3	5.7	3.6	25.3	15.1	10.9	7.2	- 0.2	111.2	61.0 50.2
31	1.4	10.7	14.9	- 4.1	1.3	5.3	1.9	2.1	1.1	1.5	2.0	3.9	58.2	10.9 47.3
32	8.0	5.6	6.2	2.4	2.5	9.2	2.9	5.6	1.5	1.9	1.7	2.1	46.7	23.6 23.1
33	5.0	5.2	3.0	2.3	8.8	11.9	20.7	11.9	19.0	2.9	3.2	4.9	121.8	97.6 24.2
34	3.3	2.8	1.7	2.0	1.7	4.3	9.2	1.0	9.0	1.7	1.0	1.3	43.1	41.2 1.9
35	2.5	1.6	1.7	1.6	10.1	31.7	20.2	16.8	1.1	1.1	1.1	1.0	110.6	96.5 14.1
36	1.9	6.1	3.0	1.5	16.9	-10.9	10.4	37.9	0.6	1.3	1.6	1.4	81.8	116.6 -34.8
37	2.8	3.7	1.3	2.2	1.4	2.2	2.3	1.2	1.1	1.6	1.6	1.6	26.9	78.3 -51.4
38	1.7	3.2	2.5	1.4	15.3	38.3	27.4	6.8	18.0	4.3	6.3	4.4	127.3	142.3 -15.0
AVGE.	7.1	5.2	4.2	2.4	7.2	13.9	13.3	12.8	7.9	5.0	5.4	5.3	89.7	65.5 24.2

COLORADO WATER CONSERVATION BOARD -- ENGINEERING DEPARTMENT

CADDOA RESERVOIR STUDY

ARKANSAS RIVER AT GARDEN CITY

1908-1938

Values 1000 AF

Date 1942

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANNUAL	APR-SEP OCT-MAR
1908	15.1	7.6	7.8	0	0	3.0	1.1	0.2	0	56.1	10.2	11.8	150.0	0 150.0
09	5.2	1.1	0.7	0.7	0	18.8	12.5	21.2	63.8	5.2	2.8	5.0	147.0	129.0 18.0
1910	1.4	1.4	1.7	3.0	1.6	1.4	0	19.5	0	0	0.2	0.4	37.0	20.0 17.0
11	1.4	1.4	1.7	0.4	3.0	0	12.7	1.0	0	1.4	0.6	10.3	33.0	17.0 16.0
12	5.9	10.1	12.2	1.1	0.5	18.1	3.2	35.7	7.2	3.0	2.6	6.2	110.0	67.0 43.0
13	15.7	12.6	7.2	0.8	0	5.2	6.0	0	0	0.4	0.7	5.8	52.0	1.0 51.0
14	11.5	7.2	3.2	1.8	130.7	143.7	82.1	11.6	1.2	3.2	1.1	10.7	411.0	408.0 3.0
15	12.1	10.0	11.4	56.9	64.7	119.5	19.2	80.4	10.5	5.5	0.4	10.7	410.0	354.0 56.0
16	8.5	11.2	2.7	1.0	0.1	2.0	0	11.7	2.2	1.8	1.1	1.7	52.0	17.0 35.0
17	1.0	0.8	1.1	0.4	0.2	1.1	0.9	1.7	1.6	0.2	0.5	0.9	10.0	7.0 3.0
18	4.7	3.4	3.6	0.2	0	0.4	0.7	0	0.7	2.1	3.8	6.4	26.0	2.0 24.0
19	1.8	2.7	7.2	11.4	18.5	2.0	5.8	11.6	2.7	1.9	5.5	6.9	121.0	99.0 22.0
1920	5.9	3.2	1.4	3.5	3.7	2.0	19.5	11.2	17.1	6.6	4.4	5.6	105.0	73.6 31.4
21	12.0	10.0	8.0	2.5	1.8	517.0	140.0	127.7	10.0	28.1	25.9	42.1	945.0	795.0 150.0
22	10.0	6.0	1.1	10.0	3.0	1.0	0	0	0	0.2	0.2	0.2	32.0	1.0 31.0
23	0.7	0.9	0.9	0.9	22.1	71.4	17.2	213.0	95.8	185.0	53.3	11.4	702.5	186.4 516.1
24	45.5	88.2	95.5	76.2	13.8	5.6	0.1	0	0	0.2	1.1	7.3	233.4	95.7 137.7
25	6.4	7.1	1.2	0.9	0.7	0.3	56.3	31.7	0.2	0	1.3	1.6	107.0	90.1 16.9
26	6.2	2.0	0.5	0.7	0.2	0.1	0	0	0	0	0.5	0.5	10.5	1.0 9.5
27	0.2	0.7	0.8	0.5	0.1	0.1	70.1	129.0	1.5	0.5	1.1	1.6	205.7	201.1 4.6
28	6.5	2.7	2.0	2.1	92.2	145.0	20.7	1.7	0	0.2	3.8	19.1	256.7	222.0 34.7
29	10.0	5.4	9.1	0.9	1.3	0.1	0	81.8	0.4	0.8	8.5	13.0	131.2	9.5 121.7
1930	5.6	6.4	2.2	0.7	3.7	0.4	0	1.0	0.2	35.4	8.8	27.7	91.3	6.2 85.1
31	11.5	1.5	5.5	18.2	5.4	2.1	0	0.2	0	0	0	0.4	46.0	27.0 19.0
32	1.5	2.4	0.9	0.5	0.3	5.7	0	0	0	0.1	0.1	0.1	11.6	0.5 11.1
33	0.1	0.2	0.2	0.1	19.7	0.2	0	15.6	13.5	0.1	0.8	0.6	51.2	49.1 2.1
34	2.1	2.6	3.8	0.2	0.1	0	0	0	1.5	0	0.2	0.2	11.0	1.7 9.3
35	0.1	0.1	0	0	28.0	12.5	26.5	7.5	1.3	0.1	0.2	1.3	82.7	81.0 1.7
36	0.2	1.1	0.1	0	6.5	46.8	14.5	75.0	1.2	0.1	0.6	0.5	199.2	196.5 2.7
37	0.3	3.7	1.1	0.1	0	11.2	0	0	16.5	0	0.2	0.1	36.1	36.1 0
38	0.1	0.1	0.1	0.1	0.6	5.0	8.1	0	17.8	0.1	0.5	1.0	37.1	32.2 4.9
AVGE.	6.9	7.1	5.2	7.8	11.2	36.8	17.9	31.6	8.6	20.3	5.5	8.5	171.0	116.9 54.1

* Values calculated to July 1932, recorded thereafter.

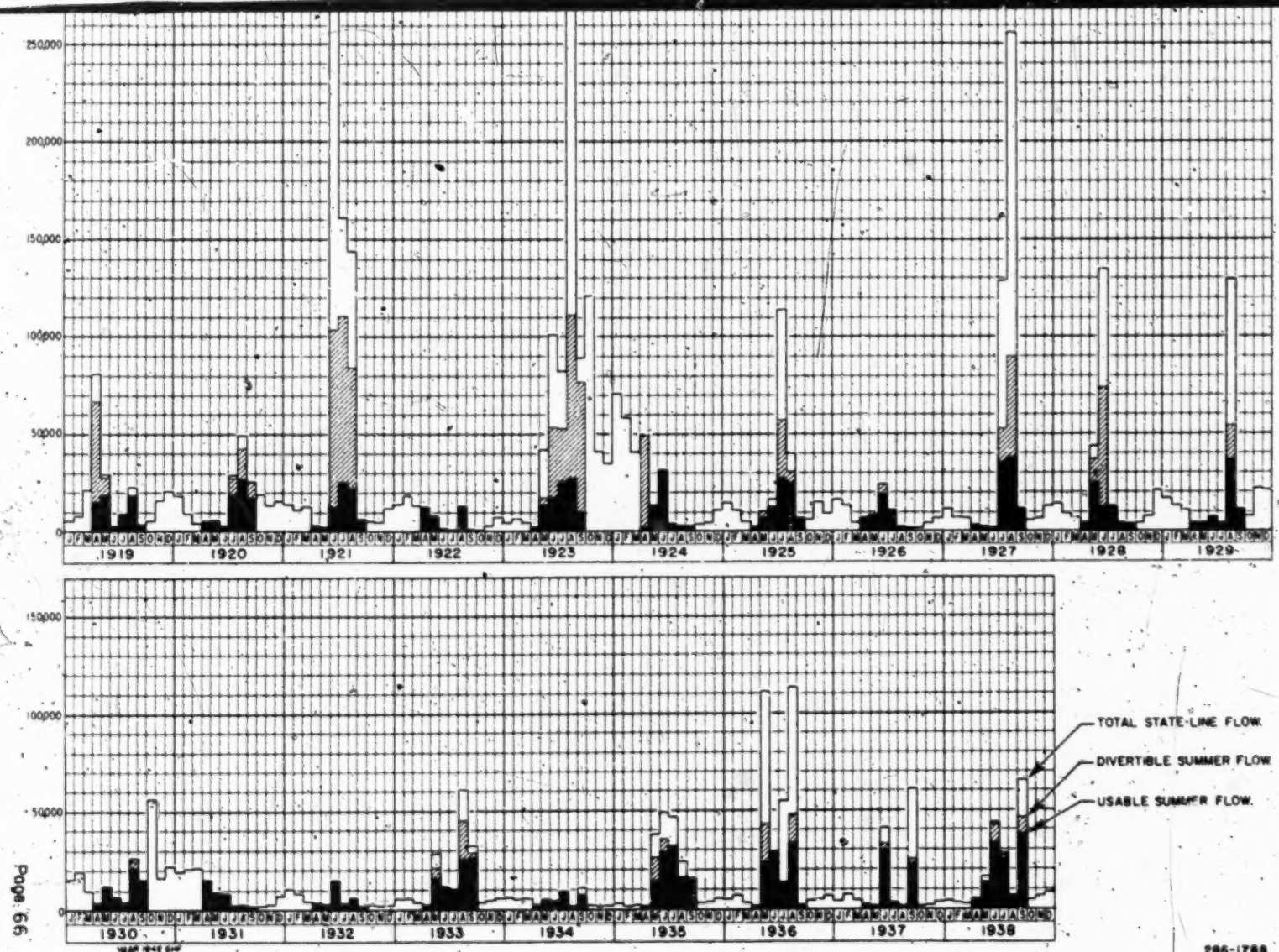
1937-1938

Diversions By Kansas Ditches
STATELINE TO GARDEN CITY
(Values - 1000 AF)
(Calculated)

J. R. E.

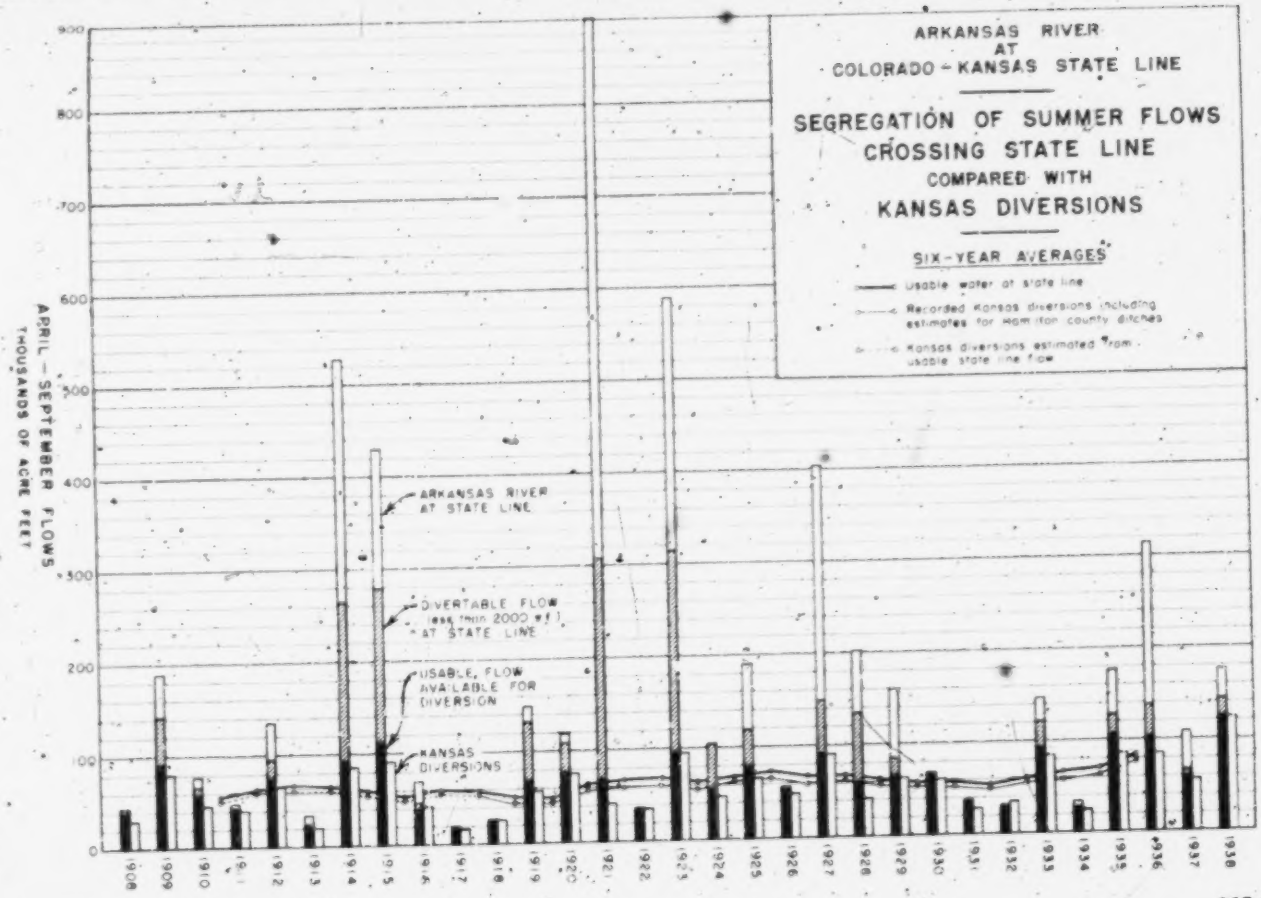
Year	ANNUAL Total	ANNUAL Syracuse Group	ANNUAL Garden City Group	SUMMER Total	SUMMER Syracuse Group	SUMMER Garden City Group	WINTER Total	WINTER Syracuse Group	WINTER Garden City Group
1908	45.0	6.1	38.9	30.0	4.9	25.1	15.0	1.2	13.8
1909	93.0	8.0	85.0	80.0	6.0	74.0	13.0	2.0	11.0
1910	57.0	6.1	50.9	45.0	4.8	40.2	12.0	1.3	10.7
1911	56.0	5.3	50.7	40.0	4.4	35.6	16.0	.9	15.1
1912	75.0	6.1	68.9	65.0	4.9	60.1	10.0	1.2	8.8
1913	29.0	2.7	26.3	20.0	2.6	17.4	9.0	.1	8.9
1914	96.0	13.7	82.3	85.0	9.0	76.0	11.0	4.7	6.3
1915	105.0	14.7	90.3	90.0	10.0	80.0	15.0	4.7	10.3
1916	82.2	5.8	76.4	41.4	4.4	37.0	40.8	1.4	39.4
1917	54.3	2.2	52.1	17.1	2.2	14.9	37.2	0	37.2
1918	69.3	3.9	65.4	26.9	3.4	23.5	42.4	.5	41.9
1919	99.0	8.5	90.5	58.5	6.0	52.5	40.5	2.5	38.0
1920	111.7	11.5	100.2	73.7	8.5	65.2	38.0	3.0	35.0
1921	71.0	6.4	64.6	41.6	5.0	36.6	29.4	1.4	28.0
1922	56.4	5.7	50.7	35.2	4.5	30.7	21.2	1.2	20.0
1923	116.6	13.5	103.1	93.2	10.0	83.2	23.4	3.5	19.9
1924	55.7	8.5	47.2	46.5	5.5	41.0	9.2	3.0	6.2
1925	117.5	10.5	107.0	65.0	7.0	58.0	52.5	3.5	49.0
1926	78.7	16.5	62.2	47.3	11.5	35.8	31.4	5.0	26.4
1927	127.8	11.5	116.3	89.4	7.5	81.9	38.4	4.0	34.4
1928	85.5	16.5	69.0	40.5	11.0	29.5	45.0	5.5	39.5
1929	123.4	11.8	111.6	62.0	8.0	54.0	61.4	3.8	57.6
1930	116.6	13.6	103.0	60.2	9.6	50.7	56.4	4.1	52.3
1931	61.9	12.3	49.6	28.5	8.5	20.0	33.4	3.8	29.6
1932	54.2	13.6	40.6	33.7	9.6	24.1	20.5	4.0	16.5
1933	110.6	17.2	93.4	81.2	11.5	72.7	26.4	5.7	20.7
1934	46.8	12.5	34.3	23.4	8.3	15.1	23.4	4.2	19.2
1935	102.1	14.5	87.6	86.2	9.5	77.7	16.9	5.0	11.9
1936	120.2	21.4	98.8	80.0	11.9	69.1	36.2	6.5	29.7
1937	69.9	15.3	54.6	55.6	10.2	45.4	14.3	5.1	9.2
1938	145.2	14.8	130.4	122.7	10.0	112.7	22.5	4.8	17.7
AVGE.	84.9	10.6	74.3	57.1	7.5	49.6	27.8	3.1	24.7

Note: Records for Garden City Group 1916-1938 from Kansas Water Bailiff's Reports, Reports of Kansas Irrigation Commission, and U.S.G.S. Water Supply Papers; 1908-1915 from analysis of Divertible and Usable Stateline Flows. Syracuse Group estimated from Diversions records of Garden City Group and stream flow records.



Colo. Ex. 214

286-1788



APRIL 1942

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CADDOA RESERVOIR STUDY

CHANGES IN CHARACTER AND AMOUNT OF STATELINE FLOWS

OPERATIONS PLAN F

Averages for 1908-1938: Values in 1000 A.F. Units

HISTORICAL CONDITIONS	ANNUAL	SUMMER	WINTER
1. Arkansas River at Stateline - recorded	260.7	180.4	80.3
(a) Unused in Kansas and wasted by Garden City	171.0	116.9	54.1
(b) Used in Kansas - diversions measured at Stateline	89.7	63.5	26.2
AFTER-CADDOA CONDITIONS			
2. Total Upstream Depletions	51.8	25.8	26.0
(a) Evaporation Loss at Caddoa Reservoir	14.8	10.9	3.9
(b) Depletions by Colorado after Caddoa Regulation	37.0*	14.9	22.1
3. Arkansas River at Stateline - depleted	208.9	154.6	54.3
(a) Unused in Kansas	79.6	51.5	28.1
(1) Caddoa Flood Spills	55.8	43.5	12.3
(2) Flood Crests, below	17.1	6.9	10.2
(3) Divertible but unusable	6.7	1.1	5.6
(b) Usable in Kansas	129.3	103.1	26.2
4. Increase in Kansas Usable Supply	39.6	39.6**	0.0

* Indicates Conservation Benefits to Colorado.
** Indicates Conservation Benefits to Kansas.

CADDOA RESERVOIR STUDY

CONSERVATION BENEFITS TO KANSAS

INCREASED USABLE STATELINE SUPPLIES OF SUMMER MONTHS

Period 1908-1938: Units 1000 A.F.

(1) YEAR	(2) HISTORICAL DIVERSIONS STATELINE*	(3) PLAN F STATELINE DELIVERIES	(4) INCREASED USABLE SUPPLIES
1908	36.4	82.5	46.1
09	86.4	111.0	24.6
1910	51.4	111.9	60.5
11	46.4	72.5	26.1
12	71.4	98.9	27.5
13	26.4	56.5	30.1
14	91.4	129.0	37.6
1915	96.4	126.0	29.6
16	47.8	116.5	68.7
17	23.5	99.5	76.0
18	33.3	70.3	37.0
19	64.9	117.5	52.6
1920	80.1	118.5	38.4
21	48.0	105.6	57.6
22	41.6	117.7	76.1
23	99.6	118.6	19.0
24	52.9	131.4	78.5
1925	71.4	108.3	36.9
26	53.7	104.5	50.8
27	95.8	108.4	12.6
28	46.9	100.2	53.3
29	68.4	111.6	43.2
1930	66.8	109.8	43.2
31	34.9	90.5	55.6
32	40.1	52.4	12.3
33	90.6	93.0	2.4
34	29.6	60.7	31.1
1935	91.6	98.9	7.3
36	90.4	149.9	59.5
37	62.8	93.9	31.9
38	129.1	129.6	0.5
AVGE.	63.5	103.1	39.6

Note: Summer months are April to September inclusive.

* Seasonal Diversions of Kansas ditches per Colorado Exhibit No. 213 were 6.4 less than values here shown.

CADDOA RESERVOIR STUDY

STATELINE DEPLETIONS - OPERATIONS PLAN F
Averages for 1908-1938: Units 1000 AF

Year (1)	Stateline Historical (2)	Caddoa Storage (3)	Storage Change (4)	Evap. Loss (5)	Increased Irrig. Depletions* (6)	Stateline Plan F (7)
		35.0				
1908	560.8	123.6	88.6	7.9	3.6	460.7
09	251.4	198.4	74.8	15.0	16.8	144.8
1910	119.4	88.5	-109.9	23.4	87.6	118.3
11	107.2	40.2	- 48.3	8.7	42.9	103.9
12	222.7	54.4	14.2	8.7	47.9	151.9
13	115.3	13.6	- 40.8	6.3	28.3	121.5
14	576.5	321.5	307.9	26.8	6.9	235.3
1915	495.7	322.1	0.6	25.1	26.3	443.7
16	444.3	160.9	-161.2	27.2	101.8	176.5
17	59.4	44.1	-116.8	13.3	50.1	112.8
18	58.9	21.1	- 23.0	7.7	1.1	73.1
19	225.9	28.3	7.2	5.5	35.6	177.6
1920	199.2	67.8	39.5	7.6	-15.2	167.3
21	961.4	256.1	188.3	24.3	75.7	673.1
22	93.7	57.1	-199.0	21.8	101.7	169.2
23	800.8	234.1	177.0	12.9	- 0.2	609.1
24	292.6	107.1	-127.0	21.6	52.5	345.5
1925	254.0	124.1	17.0	17.1	60.6	159.3
26	102.9	35.1	- 89.0	15.5	39.9	136.5
27	452.9	213.3	178.2	16.3	21.8	236.6
28	264.2	119.0	- 94.3	16.1	45.0	297.4
29	250.8	143.3	24.3	15.4	50.5	160.6
1930	205.5	107.6	- 35.7	15.9	51.1	174.2
31	107.2	7.1	-100.5	15.9	48.6	143.2
32	58.3	0.9	- 6.2	6.0	-18.7	77.2
33	173.0	77.4	76.5	12.2	-32.7	117.0
34	54.1	4.6	- 72.8	11.7	34.9	80.3
1935	193.2	37.1	32.5	13.7	17.8	129.2
36	345.0	92.2	55.1	15.4	78.7	195.8
37	132.3	43.2	- 51.0	12.7	41.0	129.6
38	204.5	68.2	27.0	10.6	12.0	154.9
AVGE.	260.7		1.1	14.8	35.9*	208.9

* Indicates Colorado benefits as measured by depletions of Stateline flows attributable to additional diversions and increased uses upstream from Stateline.

CADDOA RESERVOIR STUDY

OPERATIONS PLAN F

COMPARATIVE CONSERVATION BENEFITS
Period 1908-1938: Units 1000 AF

	Kansas Benefits			Colorado Benefits		
	Annual	10-year Averages	Percent of Total	Annual	10-year Averages	Percent of Total
1908	46.1			3.6		
09	24.6			16.8		
1910	60.5			87.6		
11	26.1			42.9		
12	27.5			47.9		
13	30.1			28.3		
14	37.6			6.5		
1915	29.6			26.3		
16	68.7			101.8		
17	76.0	42.7	53.9	50.1	41.2	49.1
18	37.0	41.8	50.5	1.1	40.9	49.5
19	52.6	44.6	51.0	35.6	42.8	49.0
1920	38.4	42.4	56.6	-15.2	32.5	43.4
21	57.6	45.5	56.0	75.7	35.8	44.0
22	76.1	50.4	55.0	101.7	41.2	45.0
23	19.0	49.3	56.3	- 0.2	38.3	43.7
24	78.5	53.4	55.5	52.5	42.9	44.5
1925	36.9	54.1	53.8	60.6	46.4	46.2
26	50.8	52.3	56.5	39.9	40.2	43.5
27	12.6	46.0	55.2	21.8	37.4	44.8
28	53.3	47.6	53.3	45.0	41.7	46.7
29	43.2	46.6	51.9	50.5	43.2	48.1
1930	43.2	47.1	48.6	51.1	49.9	51.4
31	55.6	46.9	49.8	48.6	47.2	50.2
32	12.3	40.5	53.6	-18.7	35.1	46.4
33	2.4	38.9	54.9	-32.7	31.9	45.1
34	31.1	34.1	53.1	34.9	30.1	[illegible]
1935	7.3	31.2	54.7	17.8	25.8	45.3
36	59.5	32.1	51.9	78.7	29.7	48.1
37	31.9	34.9	51.8	41.0	31.6	48.2
38	0.5	28.7	50.4	12.0	28.3	49.6
AVGE.	39.6		52.5	35.9		47.5

TABLE 16

RETURN FLOW, ARKANSAS RIVER,
Canyon City to Holly, Colorado.
R. I. Meeker, Irrigation Engineer.

Year	Acre-feet	Remarks
1912	140,000	
13	112,000	NOTE: Return flow deduced for 5-year
14	198,000	period, 1922 to 1926. Average 240,000 acre-feet.
15	199,000	Using 240,000 as a base figure, return flows com-
1916	175,000	puted for each year according to yearly ditch
17	188,000	diversion percents using 1,080,000 acre-feet
18	194,000	as base figure for ditch diversions; period of
19	208,000	application 1922 to 1930.
20	260,000	Return flow 1910 taken at 130,000 acre-feet (Patterson)
		" " 1921 " " 220,700 " "
1921	200,000	Yearly values between 1910 and 1920 interpolated,
22	218,000	and modified according to yearly percents of ditch
23	288,000	diversions using 1,100,000 acre-feet as the base of
24	250,000	ditch diversions.
25	204,000	
1926	240,000	
27	247,000	
28	257,000	
29	266,000	
30	228,000	
Totals	4,072,000	
Mean	214,000	

RETURN FLOW VALUES, ARKANSAS RIVER, CANYON CITY TO HOLLY.

River Section	Period	Average Acre-ft. per year	Mean Sec.-ft.	Monthly Range Sec.-ft.
1. Canyon City to Pueblo	1922 to 1926	15,000	21	9 to 30
2. Pueblo to La Junta	1922 to 1926	113,000*	156	97 to 206
3. La Junta to Lamar	1922 to 1926	49,000	68	39 to 100
4. Lamar to Holly	1922 to 1926	65,000**	90	73 to 107
Total		242,000	335	218 to 443

* Includes Salt Creek and Return Flow from Arkansas water used on tributaries.

** Includes drainage water intercepted by Amity Canal and Holly Drain.

ARKANSAS RIVER

A Suggested Permanent Method of Division of the Water
Which will also Protect Storage in and Utilization of Caddoa Reservoir
through
Key Measuring Stations Above

Acre Feet

Year	Corrected Arkansas River at Canon City	Purgatoire River at Mouth (Colo. Ex. 204)	Total	50% of Total
1908	396,271	83,631	479,902	239,951
1909	701,970	155,120	857,090	428,545
1910	567,408	77,386	644,794	322,397
1911	701,618	42,723	744,341	372,171
1912	671,535	89,740	761,275	380,637
1913	685,752	31,926	517,678	258,839
1914	721,900	204,360	926,260	463,130
1915	546,600	174,260	720,260	360,130
1916	685,620	61,524	747,144	373,572
1917	670,580	61,805	732,385	366,192
1918	636,920	79,870	716,790	358,395
1919	639,250	103,530	742,780	371,390
1920	688,640	71,179	759,819	379,910
1921	717,850	84,556	802,406	401,203
1922	560,310	25,700	586,010	293,005
1923	701,890	390,404	1,092,294	546,147
1924	671,000	54,611	725,611	362,805
1925	427,900	89,556	517,456	258,728
1926	547,540	84,970	632,510	316,255
1927	600,700	204,774	805,474	402,737
1928	569,430	115,235	684,665	342,333
1929	628,420	131,644	760,064	380,032
1930	521,200	119,383	640,583	320,292
1931	342,349	58,801	401,150	200,575
1932	518,097	22,834	540,931	270,466
1933	448,698	67,234	515,932	257,966
1934	310,238	29,822	340,060	170,030
1935	515,306	69,025	584,331	292,166
1936	627,419	66,756	694,175	347,088
1937	416,220	72,479	488,699	244,350
1938	554,850	64,070	618,920	309,460
Average	573,964	96,416	670,380	335,190

670,380 acre feet is between 52% and 54% of the average yearly water supply of the basin in Colorado--1,240,000 to 1,290,000 acre feet--Kansas Exhibit 63.

CORRECTED
ARKANSAS RIVER FLOW AT CANON CITY
1908-1938

Year	Arkansas River at Canon City Colo. Ex. 204 1	Diversions around Canon City Gage 2	Trans-mountain Water 3	Corrected Arkansas River at Canon City 1+2-3 4
1908	341,271	55,000		396,271
1909	658,970	43,000		701,970
1910	497,408	70,000		567,408
1911	638,618	63,000		701,618
1912	619,535	52,000		671,535
1913	428,752	57,000		485,752
1914	659,900	62,000		721,900
1915	491,000	57,000	2,000	546,000
1916	626,200	62,000	2,580	689,620
1917	615,900	57,000	2,320	670,580
1918	588,200	51,000	2,280	636,920
1919	582,100	59,000	1,850	639,250
1920	628,300	62,000	1,660	688,640
1921	661,700	58,000	1,850	717,850
1922	512,900	49,000	1,590	560,310
1923	651,100	53,000	2,210	701,890
1924	605,000	69,000	3,000	671,000
1925	365,900	65,000	3,000	427,900
1926	497,500	55,000	4,960	547,540
1927	550,100	59,000	8,400	600,700
1928	511,300	65,000	6,870	569,430
1929	584,300	53,000	8,880	628,420
1930	460,600	66,940	6,340	521,200
1931	270,200	76,757	4,608	342,349
1932	454,800	75,004	11,707	518,097
1933	389,200	70,006	10,508	448,698
1934	245,750	72,588	8,100	310,238
1935	468,770	76,636	30,100	515,306
1936	589,200	77,407	39,188	627,419
1937	382,500	76,233	42,513	416,220
1938	535,810	78,668	59,628	554,850.

Diversions around the gage at Canon City, 1908-1930, from Kansas Exhibit #20.
From 1931-1938 computed from Daily Reports Arkansas Valley Ditch Association.

Trans-mountain diversions 1915-1930 from Kansas Exhibit #25. From 1931-1938, Colorado Exhibit #194.